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ENGINEERING + FINANCE + COMMERCE

THE PIONEER IN ITS FIELD

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The Far Eastern Review

ENGINEERING FINANCE COMMERCE

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Harbor Improvements in the Netherlands East Indies

THE increasing volume of trade throughout the Far East is calling for the deepening and widening of channels and rivers and the construction of adequate wharfage, warehouse and terminal facilities. In no line of engineering is there greater activity at this time. From Hakodate on the north to the farthermost port in the South Seas great improvements are being carried into execution while grander schemes are being held up awaiting better financial conditions. These schemes provide a good market for all manner of machinery, appliances and materials applicable to such work. Nowhere in the East is there greater activity in this line than in the Netherlands East Indies, where the Dutch (past masters in training the waters of river and sea to do their will) are busy constructing appropriate gateways to their wonderland and paradise under the equator. The works are carried out under a director, generally an engineer, who is guided by a harbor committee. Propositions for supplies and machinery are first submitted to this committee, whose opinion must attach to the plans, etc., presented to the engineer.

The harbors of the Netherlands Indies under government management are divided according to the volume of imports and exports into *(a)* large harbors, *(b)* medium-sized harbors, *(c)* small harbors.

Ad. *(a)* The *large* harbors (seven in number) are: Island of Java: Tandjong Priok (Batavia); Sourabaya; Semarang; Tjilatjap; *Sumatra.* Belawan-Deli (Medan); Emmahaven (Padang); *Celebes:* Macassar.

The *medium sized* harbors are:

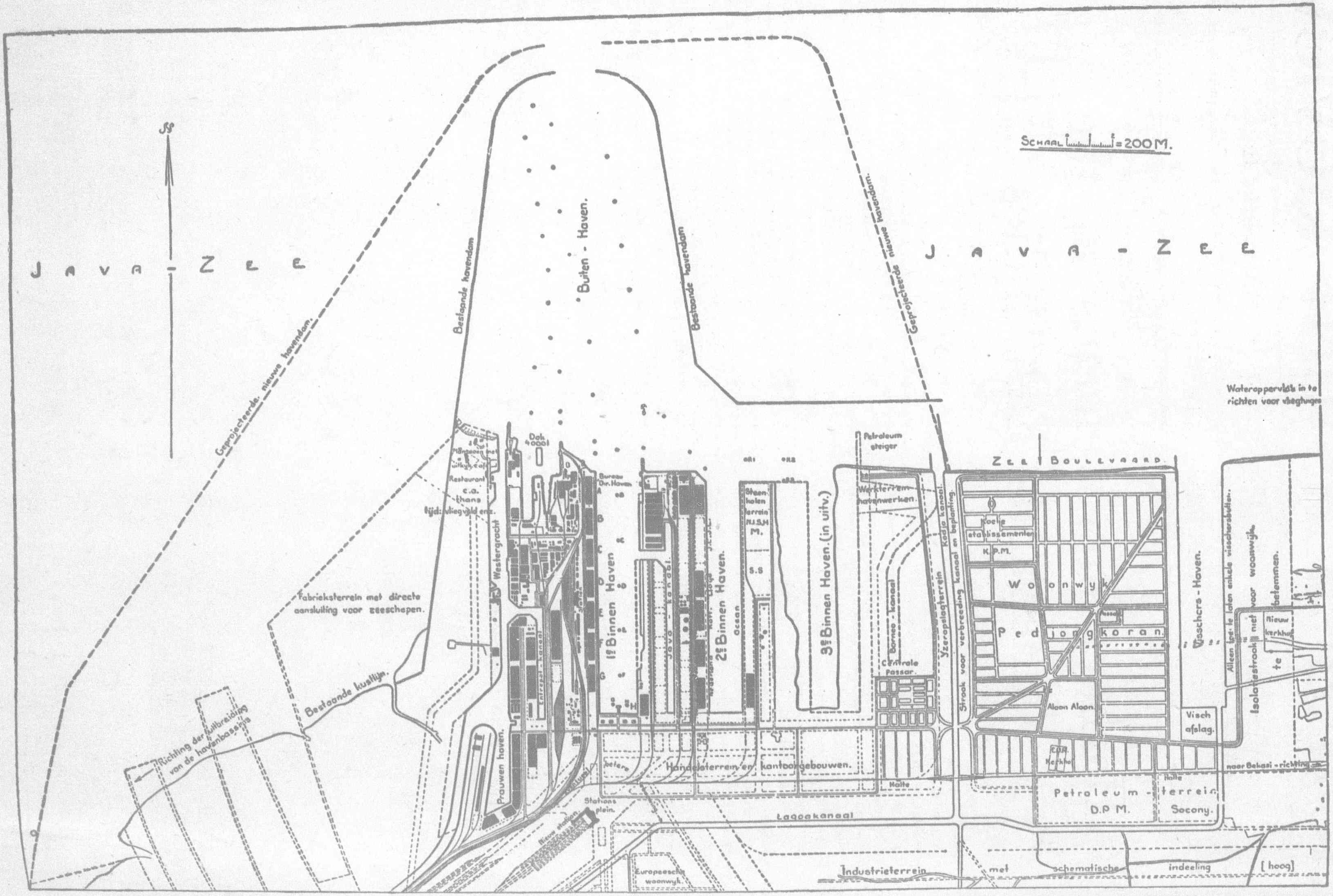
Cheribon and Banjoewangi in the island of Java, Bandjermasin and Pontianak in Borneo, Benkoolen and Palembang in Sumatra, Amboina in Amboina and Menado in Celebes.

The 450 remaining harbors make up the so-called small harbors.

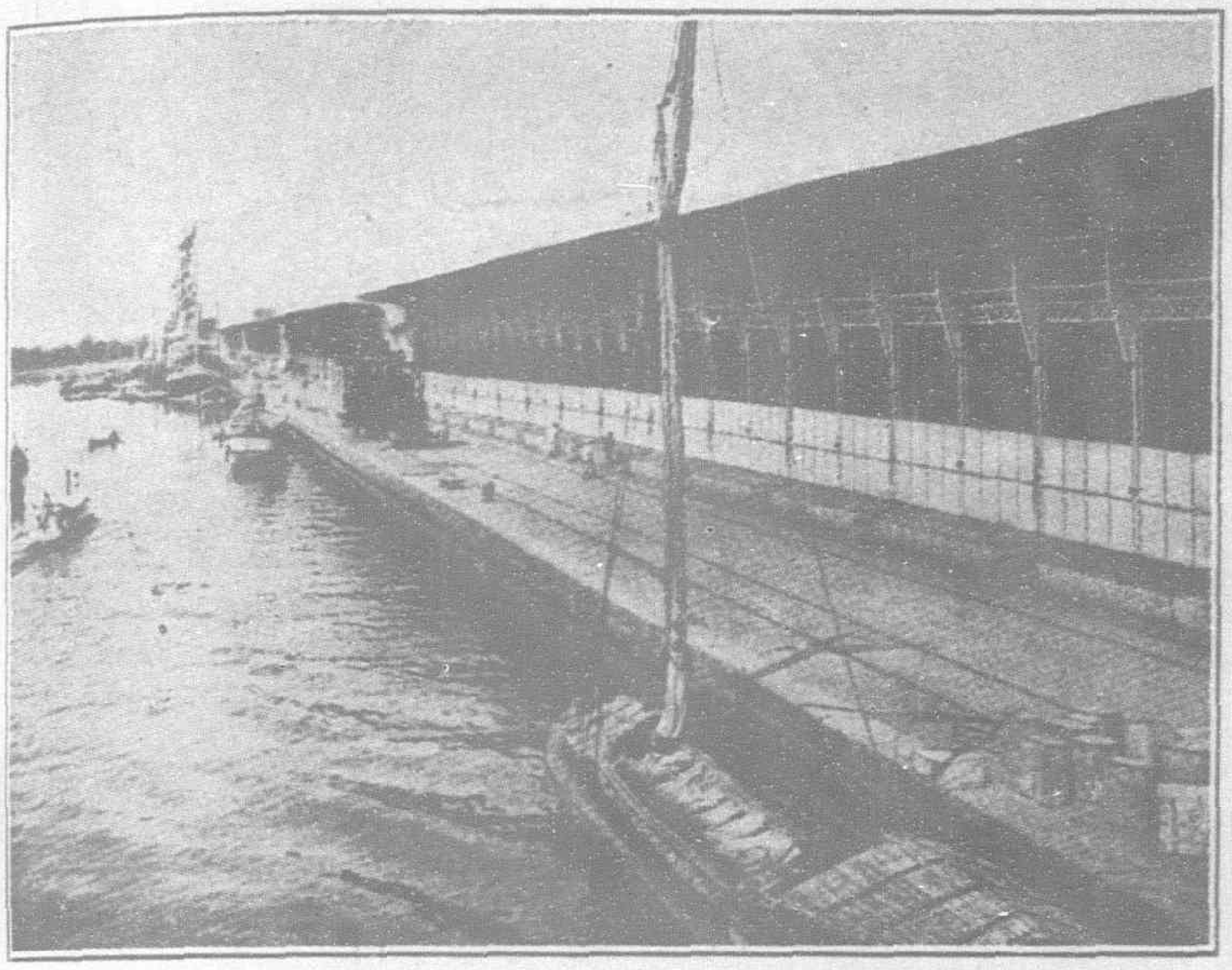
THE HARBOR OF TANDJONG PRIOK (BATAVIA).—The harbor at Tandjong Priok was constructed during the years 1877 to 1883 under management of the engineer J. A. de Gelder, according to plans by the well-known hydraulic architect J. A. A. Waldorp. His project included an outer harbor and an inner basin, which is situated to the east of the axis of the outer harbor, wherein the plan was to construct eventually a necessary second inner harbor to the west side. The front harbor, 140 H.A. in size, had a width of 1,127 M. at the base and a length of 1,740 M., measured over the axis. Both the piers, stonepiles of simple construction, were 1,765 M. and 1,963 M. long, converging, so that at the outer ends a passage-opening into an entrance of 125 M. was formed. The inner harbor had a depth of 7.5 M. at low tide (later deepened to 8.50 M.), a length of about 1,100 M. and a bottom-width of 185 M., therefore affording a water-surface of more than 20 H.A. The gully in the outer harbor was given a width of 250 M., a depth of 8 M. at low tide, after 1910 increased to 9.50 M.

On the place, where it was originally planned to construct the second harbor-basin, however, a railway yard with a station was built and a small basin dug (314 by 55 M.), originally intended as a coaling-station but afterwards equipped for the 4,000-ton floating dry-dock, which with the surrounding workshops, etc., is now the

Harbor View, Batavia


SCHAAL = 200 M.
JAVA - ZEE
JAVA - ZEE
Geprojecteerde nieuwe havendam.
Bestaande havendam
Buiten - Haven.
Bestaande havendam
Geprojecteerde nieuwe havendam.
Wateroppervlak in te richten voor vliegtuigen
Dok 4000 t
Plantsoen met uitkyk café
Restaurant c.a. thans tijd: vliegveld enz.
Westergracht
Bureau Dir. Haven
A
B
C
D
E
F
G
H
1e Binnen Haven
Java - kanaal
Ocean
2e Binnen Haven.
Steenkolen terrein N.I.S.H.M.
S.S
3e Binnen Haven. (in uitv.)
Petroleum steiger
Werkterrein havenwerken.
Zee Boulevaard.
Koelie etablissementen
K.P.M.
Woonwyk
Pedjongkoran.
Passar
Aloon Aloon.
E.O.R. Kerkhof
Kadjo kanaal.
Yzeropslagterrein
Strook voor verbreeding kanaal en beplanting.
Borneo - kanaal
Centrale Passar.
Visschers - Haven.
Visch afslag.
Alleen lage te laten enkele visschersbuiten.
Isolatiestrook niet voor woonwyk te betemmen.
Nieuw kerkhof
naar Bekasi - richting
Halte
Halte
Petroleum - terrein D.P.M.
Petroleum - terrein Socony.
Fabrieksterrein met directe aansluiting voor zeeschepen.
Bestaande kustlijn.
Richting der uitbreiding van de havenbassins
Entrepot - kanaal
Prauwen haven.
Stations plein.
Nieuw station
Handelsterrein en kantoorgebouwen.
betere
Lagoakanaal
Europeesche woonwyk.
Industrieterrein met schematische indeeling [hoog]

Batavia, Plan of Tandjong Priok Harbor



Batavia, The Tandjong Priok Wharf

The Quay at Tandjong Priok

property of the Tandjong Priok Dry-dock Company, by which it is exploited. West of the dry-dock harbor and adapted for proas is the 9 K.M. long navigation canal, which connects Tandjong Priok with Batavia. Along the western side of the first inner harbor were built a quay 1,000 M. long and seven steel godowns, each 125 M. long and 35 M. broad. The 8.80 M. wide space between the front of the quay and the front of the godowns is equipped for the use of electric cranes as well as for through railway-traffic. At the eastern side of the first inner harbor were constructed landing-stages on screw-piles, which serve for the unloading of salt, tin and coal.

It is planned to replace a considerable part of these landing-stages by a quay, which will join the 124 M. long tract of quay completed in 1914, entirely in the south of this basin, along which a spacious iron shed was also built. The growth of Tandjong Priok as import and export harbor of a rapidly developing and very important hinterland (West Java) and its increasing importance as transhipment harbor for a large part of the Indian Archipelago, made the works which had been constructed too small by the end of the nineteenth century.

The solution as to how the gradually appearing obstacles should be overcome was arrived at in 1910, after the above-mentioned visit of the committee Kraus-de Jongh, which also included this harbor in their report.

As a result of the plans, which were developed, it was decided to construct a new basin east of the first inner harbor, 1,000 M. long, 120 M. broad and, like all the larger harbors in the Dutch East-Indies, adapted for ships with a maximum draft of 40 feet. The quay construction along the western side followed directly after the dredging and several lessees were readily found for the adjacent tracts. The digging of the second inner harbor necessitated a bend in the shore end of the east harbor dam, which formerly joined the shore in a straight line. The west dam was also somewhat changed, being lengthened towards the shore, after which a considerable tract of land was reclaimed by filling in the area behind the elongation. In 1915 it was decided to also make a quay along the eastern side of the harbor and to enlarge the bottom width of the basin from 120 to 150 M. The new wall serves over a great length as anchorage for ships which load or discharge coal. In the year 1917 the second inner harbor was completed. Later elevators were constructed at the eastern edge for the mechanical handling of coal; on the western edge the national steamship enterprises are building their establishments, including among others four sheds, 40 M. broad, 120 M. long, consisting of a ground floor with a story.

A new, third inner harbor, east of the second harbor is now in course of construction. With a length of over 1,000 M. this harbor will be 215 M. wide and the quays will be equipped for ships of 12 M. draft. The small peninsula between the second and third inner harbor (300 M. broad) is already entirely spoken for while prospective lessees have also registered for tracts along the east side of the harbor. These grounds, intended for shipping purposes, commerce and industry, are being connected with the railways as well as with the waterway. The northern half of this peninsula is intended for a coal-station with conveyors for loading and unloading. The soil obtained from the dredging of the third inner harbor is utilized for raising the tracts east and south of the large harbor, which tracts are being made to serve for industries and housing. At the same time this raising offers the priceless advantage of coming a considerable step nearer the goal desired by the harbor management: a healthy Tandjong Priok.

East of the harbor area the Dutch steamship companies, headed by the Royal Packet Navigation Company, in co-operation with the government are building numerous kampong houses and coolie lodgings (the living-quarters at Pedjongkoran), with sewer system, aqueduct, electric lights, spacious markets, cinemas, central kitchens, etc. On the east side the living quarters are bounded by a fishing-harbor, for the benefit of that part of the population which remained true to the old trade. On the other side of that harbor the space is left open for an extensive aviation field. On the west side of the Pedjongkoran quarter runs the Kodja canal, accommodated for proa navigation, which connects the raised grounds south of the harbors with the inner harbors. These tracts, which can be extended to any dimension, are intended for commerce and industry. They, too, will be connected by railway. Various tracts are already taken up, among others, some have been rented to petroleum companies. Although the third inner harbor is still in an embryonic state, it has already appeared necessary to take further harbor-extension into account. So far as the large water areas and quays are concerned, this will be done at the west side of the first inner harbor.

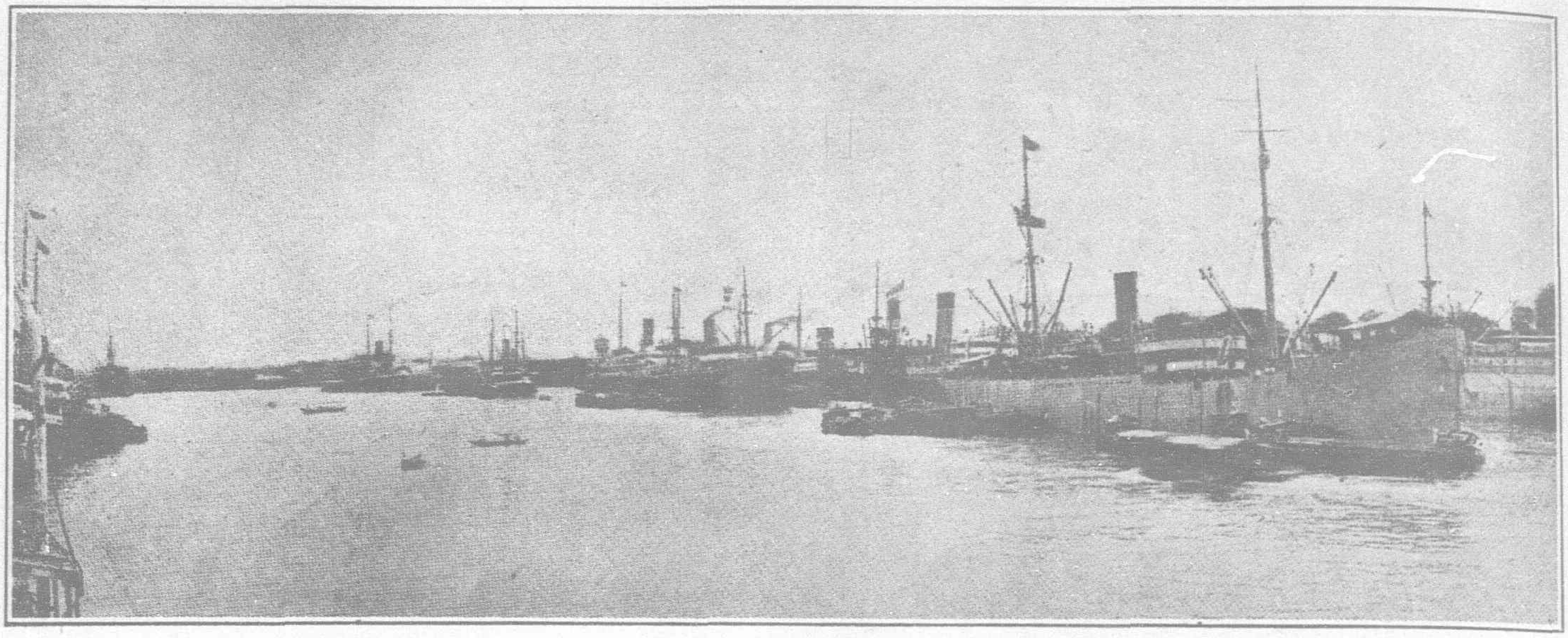
A few figures regarding the shipping in the harbor of Tandjong Priok may also be given here.

The total capacity in net register tons of the ships, which called at Priok, increased from 549,000 in 1885 to 830,000 in 1895, 1,654,000 in 1905 and over 3,000,000 in 1915.

Although Tandjong Priok, like all other harbors, suffered from the consequences of the war, a considerable revival can now be seen.

The freight traffic did not fail to keep pace with the growth in tonnage. The value of goods imported and exported amounted to:

	in 1904	and in 1913
Import	*f* 29,840,000	*f* 76,489,000
Export	*f* 25,854,000	*f* 60,820,000
Total	*f* 55,694,000	*f* 137,309,000



Harbor of Sourabaya

The receipts of the service of the customs also show a considerable increase of the freight traffic. They amounted in 1905 to *f* 3,224,000, in 1910 to *f* 4,987,000, in 1913 to *f* 7,031,000 and in 1918 to *f* 8,450,000.

Finally it should be mentioned, that without depreciations and upkeep expenses, the construction of railroads and what has been done by private enterprise, the harbor of Tandjong Priok has required up to the present time an amount of round 41 million guilders.

THE HARBOR OF SOURABAYA.—As Tandjong Priok is the import and export harbor of rapidly developing West-Java, so Sourabaya occupies this position for the eastern part of Java, the most fertile part of the island.

In 1909, Prof. J. Kraus and G. J. de Jong were invited by the government to give their advice regarding the harbor-improvement of Sourabaya.

In 1910 their report appeared, in which they suggested among other things that a great part of the commercial traffic be transferred from the heavily overcrowded Kali Mas to a spacious, modernly equipped harbor tract, and in which was included a plan of a new harbor, located at some distance from the old business centre.

This plan has been partly carried out and for the rest served as a guide for the works carried out since 1910.

These works consisted in the first place in the construction of a 200 M. wide pier (the so-called North Pier) west of the outlet of the Kali Mas and about perpendicular to the direction of this river. The pier was connected with the shore by a 400 M. wide dam alongside this outlet.

West of this dam and about parallel with it a pier was built out running from north to south. Between the north end of this pier and the west end of the North Pier there is a 350 M. wide channel opening.

The groundlevel of the beach located between the shore end of the dam and the new pier was raised with the soil obtained from the dredging of the 80 H.A. large basin, bounded by the new pier, dam, beach and North Pier and destined for industrial purposes and for building tracts.

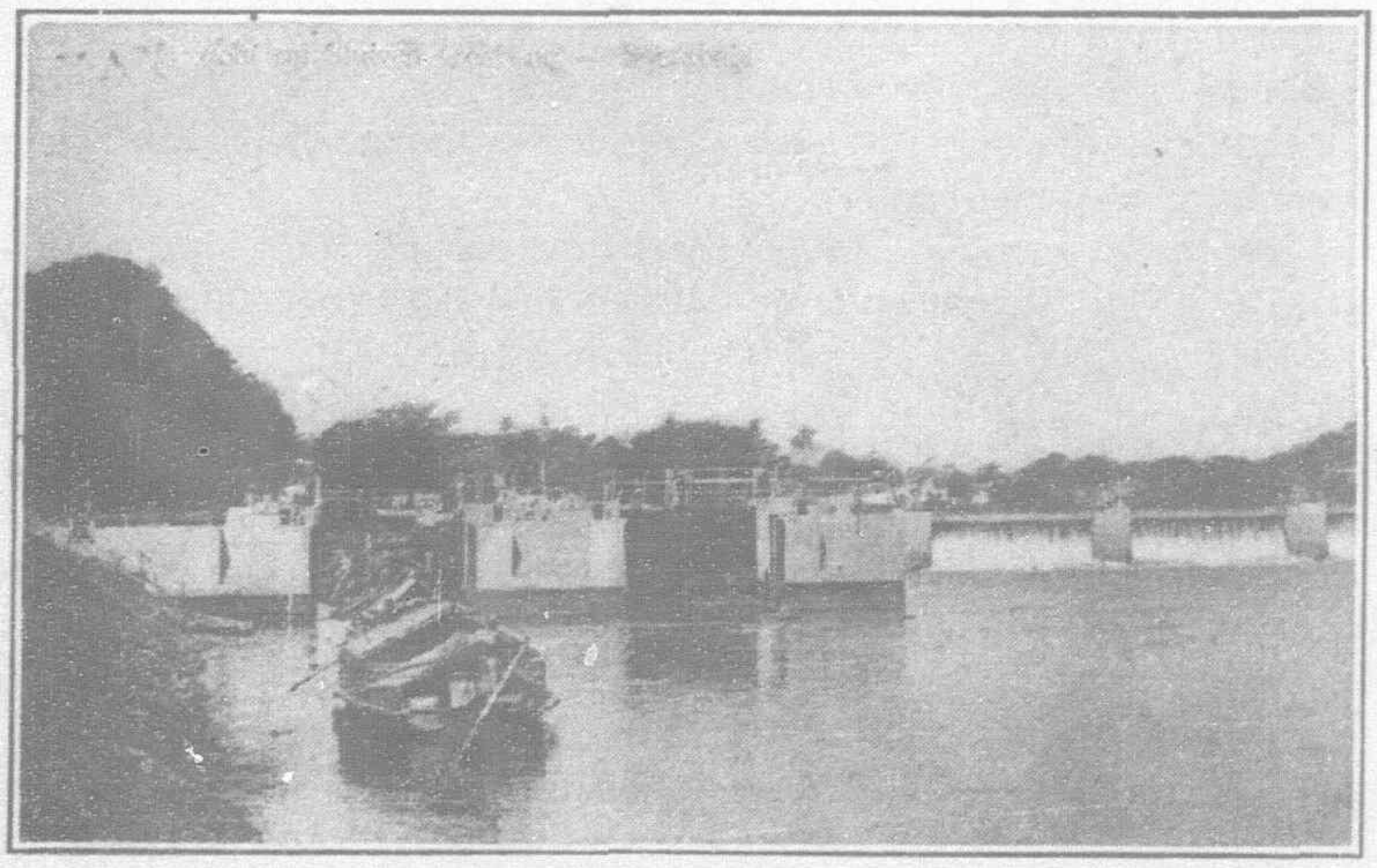
From the North Pier, the outer quay (the Rotterdam Quay, situated along a 16 M. deep waterfront) is 1200 M. in length and the inner quay (the Amsterdam Quay, along which the basin was dredged to a depth of 9 M.) 800 M. in length. The head end of the pier is also closed off by a quay (the Ymuiden Quay).

Along both the outer and the inner quay a space of 10 M. is left free for railroad-traffic and cranes while a 40 M. wide tract is intended for the building of godowns. On the shoreside of both rows of godowns runs a 30 M. wide road.

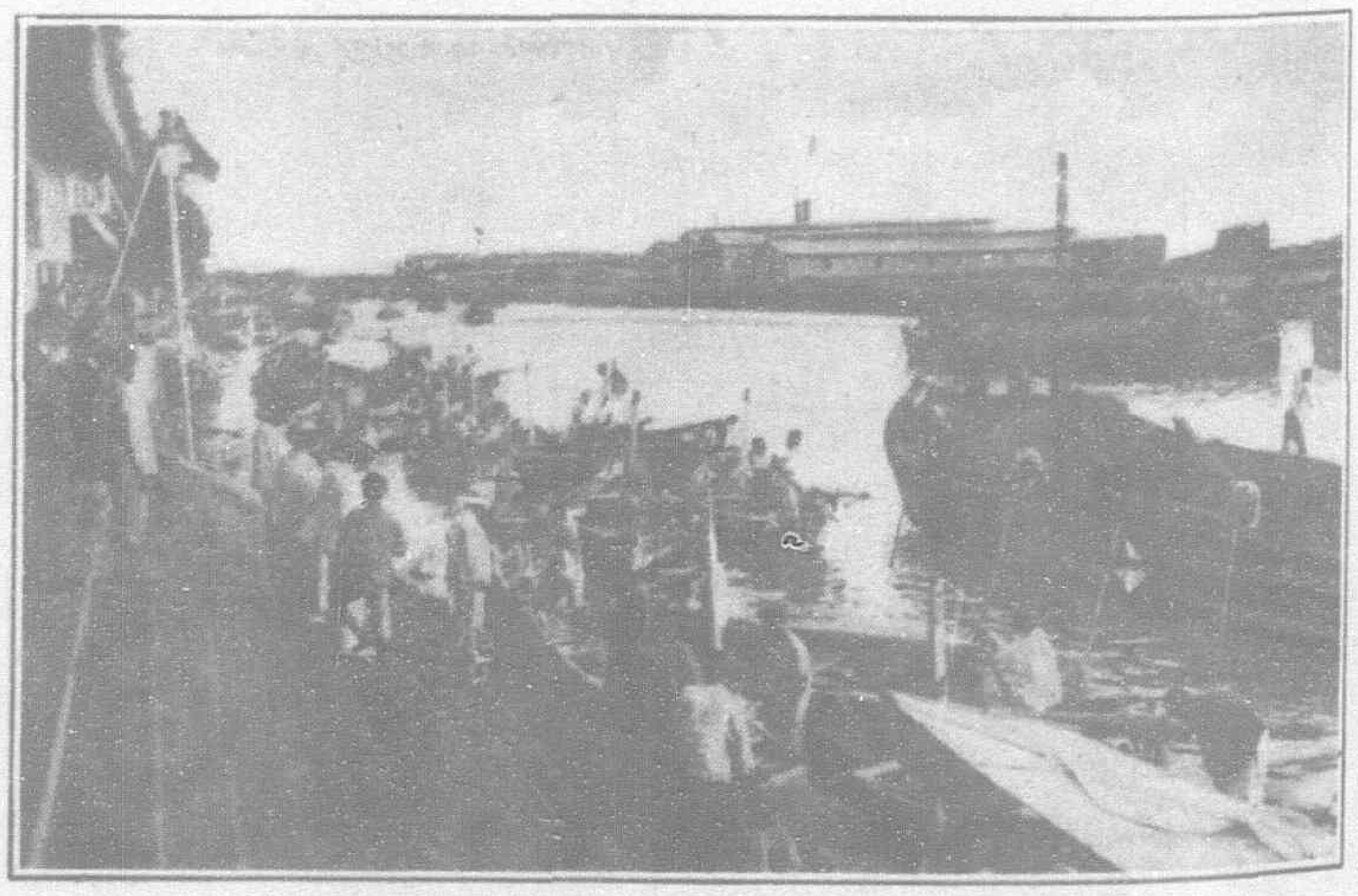
The works described once being started, their great utility became fully apparent and the increasing demand of interested parties to obtain the use of the completed structures had the result that, even before the completion of the buildings which were in course of construction, the extension of the original plan had to be begun.

The sea-going vessel almost chased the dredger away; everywhere extension of quay length was insisted on in spite of the excellent roadstead and the great number of proas, although cranes and other mechanical equipment could not at first be obtained on account of war conditions.

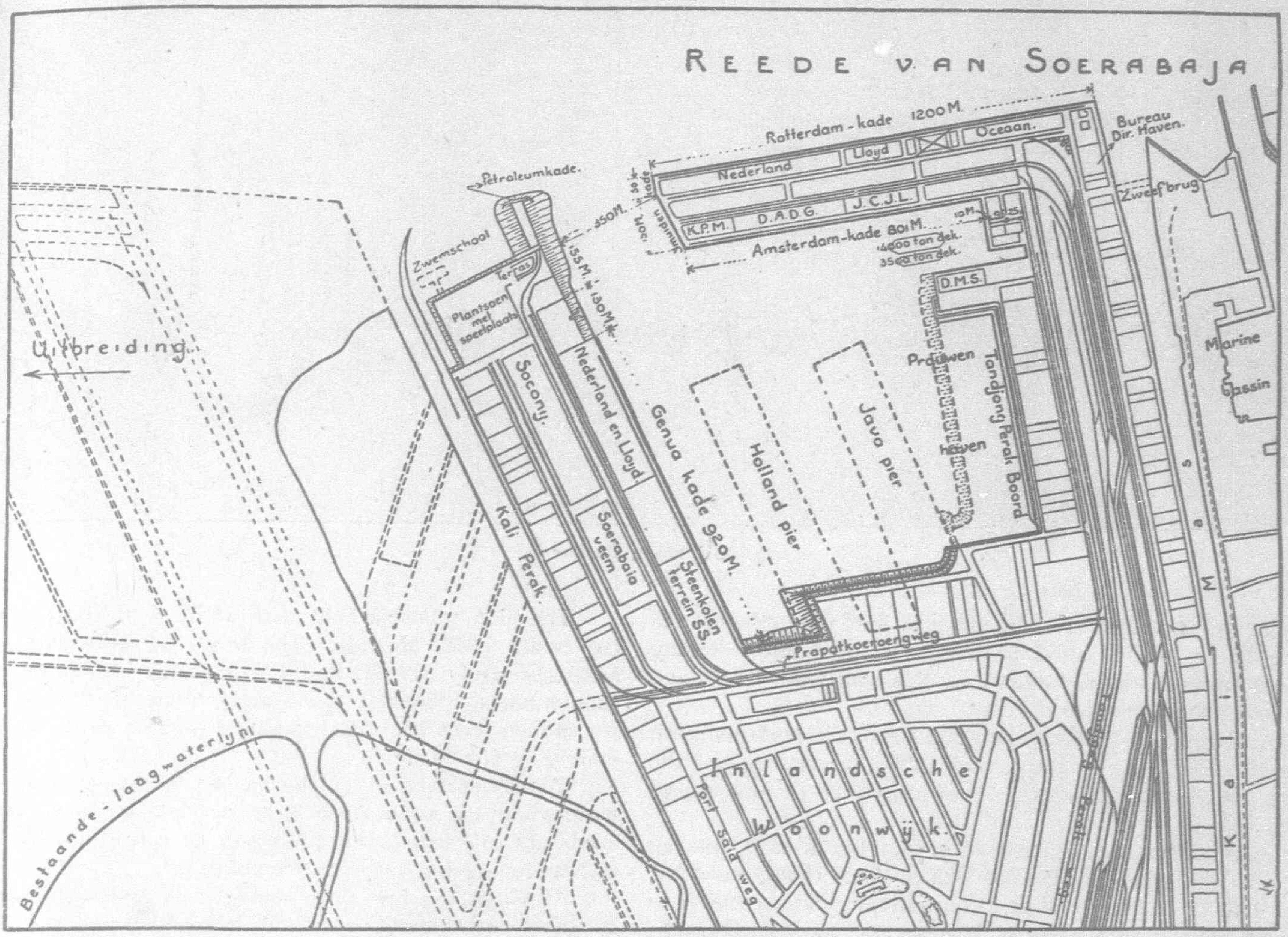
A glance at the map tells in what state the construction was in the beginning of 1920, to which may be added that the quays



View of Locks at Goebeng, Sourabaya



The Little Harbor at Oedjong, Sourabaya



Sourabaya Harbor Plan

of the Holland Pier, begun not long ago, and of the Java Pier, to be constructed after this, are already requested for rent.

While for the quays first built, a waterfront of little over 9 M. depth under low tide was provided, the newer ones will have a waterfront of 10 and 12 M. depth.

Alongside the above-mentioned West Pier, the so-called Genoa Quay, with a length of 920 M, is being built at present.

The south part of this quay is reserved for coal storage.

For the need of petroleum ships, which are not admitted into the inner harbor, a landing-stage is found at the north end of the West Dam, from where inflammable materials are stored on spacious tracts behind the Genoa Quay.

From the 400 M. wide dam along the Kali Mas, parallel with a 20 M. wide road along this river, is reserved a strip 50 M. wide for business tracts, besides a width of 30 M. for a road back of these tracts.

To the west of this was reserved 150 M. for a station and shunting-premises, to be used for harbor-service.

The tracts, intended for commercial and other purposes, alongside the East Pier of the harbor basin, are separated from these shunting-premises by a 50 M. wide road.

In the north-east corner of this basin were installed two floating dry-docks of 14,000 tons and 35,000 tons lifting power, belonging respectively to the government and to the Dry-dock Company, which latter exploits both these docks and the adjacent small dock harbor.

Wherever possible the Kali Mas has being gradually widened from 65 to 100 M., while at the same time along the entire shore, quays were in course of construction, whereby the opportunity for the mooring of proas was greatly benefited.

Where the buildings standing along the shores would make the widening of the river too expensive, the old constructions are being replaced by new ones, with deeper foundations, which allow safe dredging.

The construction of the quays and piers alongside and in the great harbor basin, which thus began to form a most important part of ocean navigation, made it necessary to look for similar tracts elsewhere which might be made ready for the use of those who wished to occupy tracts situated at shallow waterfronts.

For this purpose attention fell upon the muddy alluvial grounds west of the new works, where there is opportunity for unlimited extension and for the satisfying of all needs and desires.

Some years ago, in accordance with this idea, the West Canal was completed, the borders of which readily found prospective occupants and which will be further lengthened under the name of Kali Perak to near the Grissee Road, or in other words will be brought closer to the grounds intended for housing.

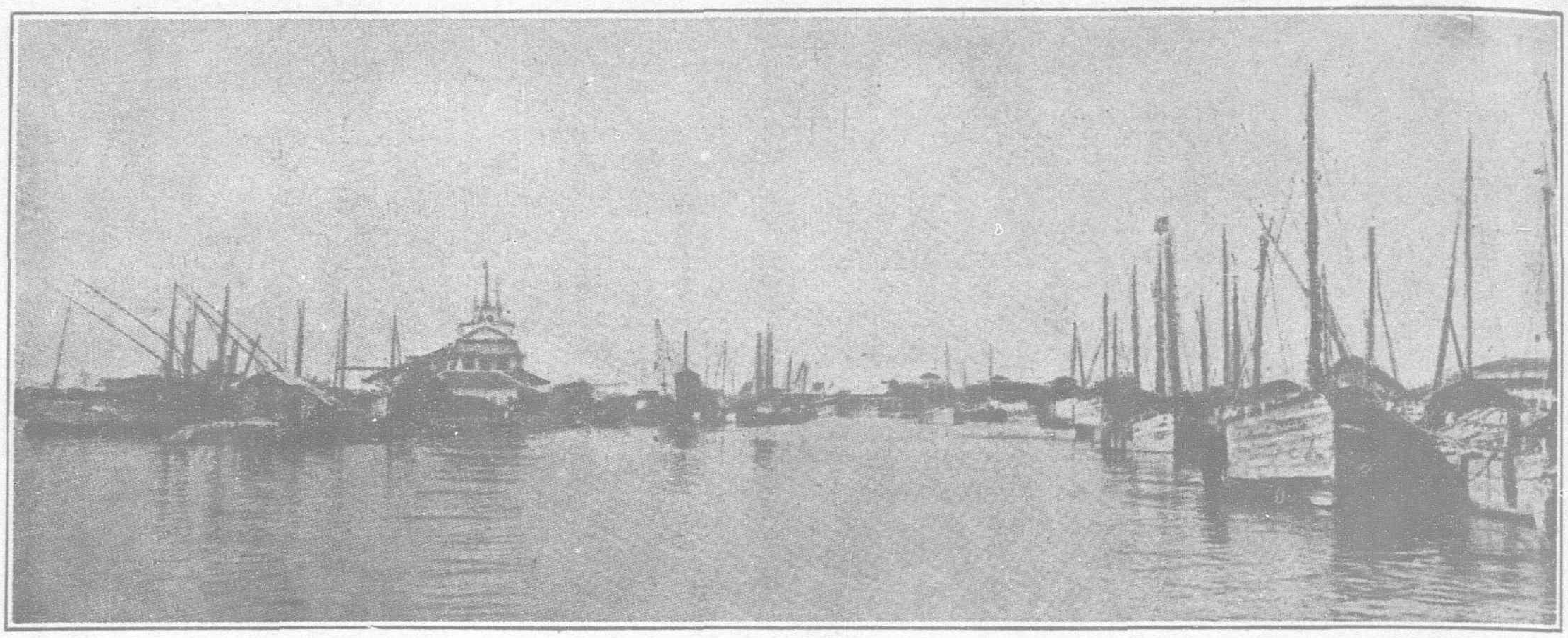
The Kali Perak may therefore be considered as a second Kali Mas, in this way, that the western bank is to be divided by branch canals, according to need, and that here also as on the other harbor tracts it will be possible to establish railway connections. It will also be possible, if desired, to widen and deepen the most northern part of the Kali Perak, so that the requisite space can be offered to factories or establishments, which need spacious and not too expensive grounds, within reach of medium-sized, sea-going vessels.

It is expected that in about ten years the plan projected by Messrs. Kraus and de Jongh will be completed, though with revisions and extensions, and preparations as to further extensions, should such then appear necessary, have been made. This is shown by the map on which, among other things, is drawn a second North Pier with basin.

The value of the *traffic* through the quay in 1918 amounted to *f* 292,000,000 and customs receipts to *f* 9,835,000

Up to the present time the harbor has required an expenditure of more than 30 million guilders, not including the expense of railroad construction and what has been built by private parties.

The Harbor of Semarang.—The original development of the harbor of Semarang came about in the same way as that



Samarang Harbor

of Batavia. Here also a river mouth was first used, that of the Semarang River, whcch could be navigated by lighters, taking their cargo from the larger vessels on the roadstead (the Java Sea), up to the storehouses in the city.

This passage, also, did not maintain its full importance until the present time. In about the year 1870 the condition of the river from silting became such that proa navigation became almost impossible.

For improvement a new connection was dug in 1872 between the sea, the so-called New Harbor Canal. This canal, however, also met with the difficulty of mud formation. Various efforts to bring about effective improvement failed to give the desired result.

Finally in 1900 it was decided to build a new proa harbor, which is now completed in spite of the many difficulties encountered.

The new harbor construction, with an area of 13 H.A., is situated east of the harbor canal, of which the west pier has been lengthened to 1,600 M., to prevent silting of the mouth and to maintain a greater depth.

The proa harbor has a spacious frontage, branching out towards the land in two custom basins, respectively 55 and 65 M. wide, and in a small harbor for fishing vessels. On the seaside this frontage is connected with the harbor canal by a 75 M. wide entrance.

The fishing harbor has a surface area of 40 by 100 M^2 and has quays on the south and east sides. These quays join those of the custom-house basins, which have a total length of 1,393 M.

The pier, which is built with 24 M. wide sheds between the two basins, is 125 M. wide. The north and south sides of the pier are respectively 314 M. and 174 M. long. Apart from the old custom-house ("boom") space and private storehouses, the harbor management has the disposal of thirteen sheds with a total area of ± 35,000 M^2.

To the equipment of the harbor belong a small dry-dock besides a 10-ton and a 25-ton stationery steam crane. Most of the sheds are so located, that they can be connected with both the railway lines going out from Semarang.

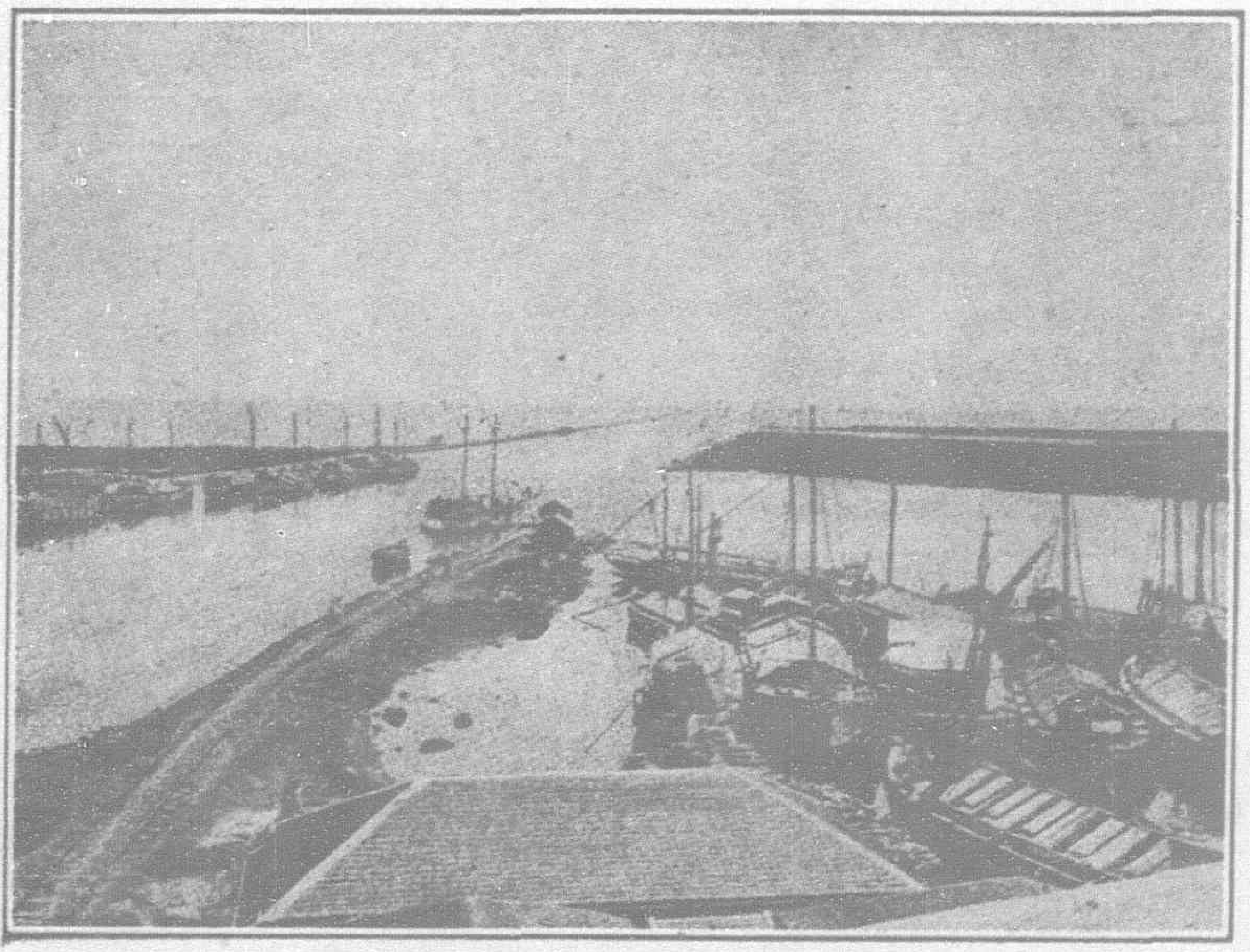
Although the new proa harbor brought about considerable improvement, this will not be sufficient in the long run. Semarang, also, wants a sea harbor and in the first place a protected roadstead, where transhipment between ship and proa can take place undisturbed.

During the west monsoon the Java Sea is often so stormy, that traffic with the shore must sometimes be stopped entirely and the discharging of freight can only take place alee of the ship.

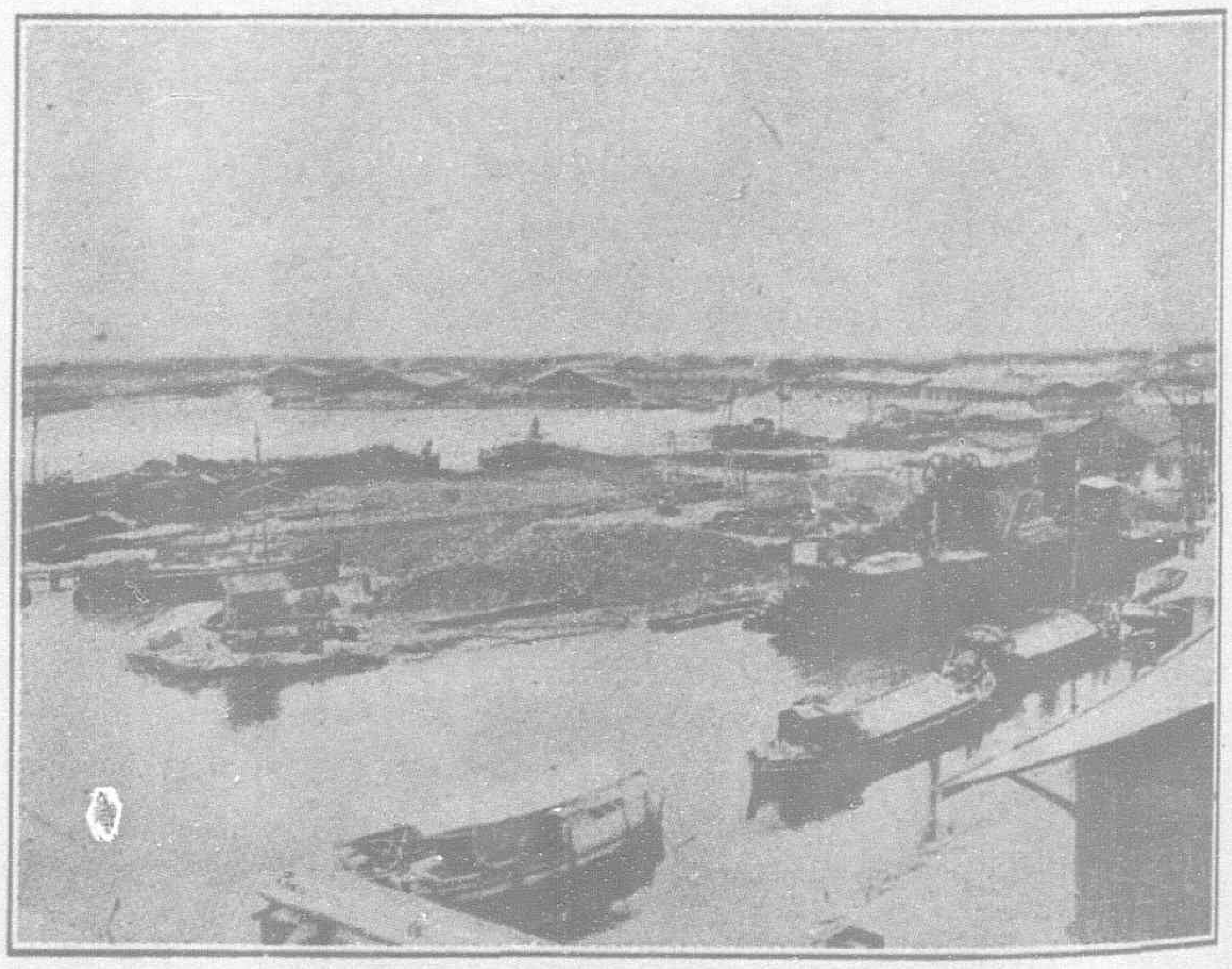
Delay in transport, accidents to proas, damage and loss of goods are an inevitable consequence of this condition.

Before risking a harbor venture, however, the government has made thorough investigation into those technical and economical problems, which must not be overlooked when building seaports.

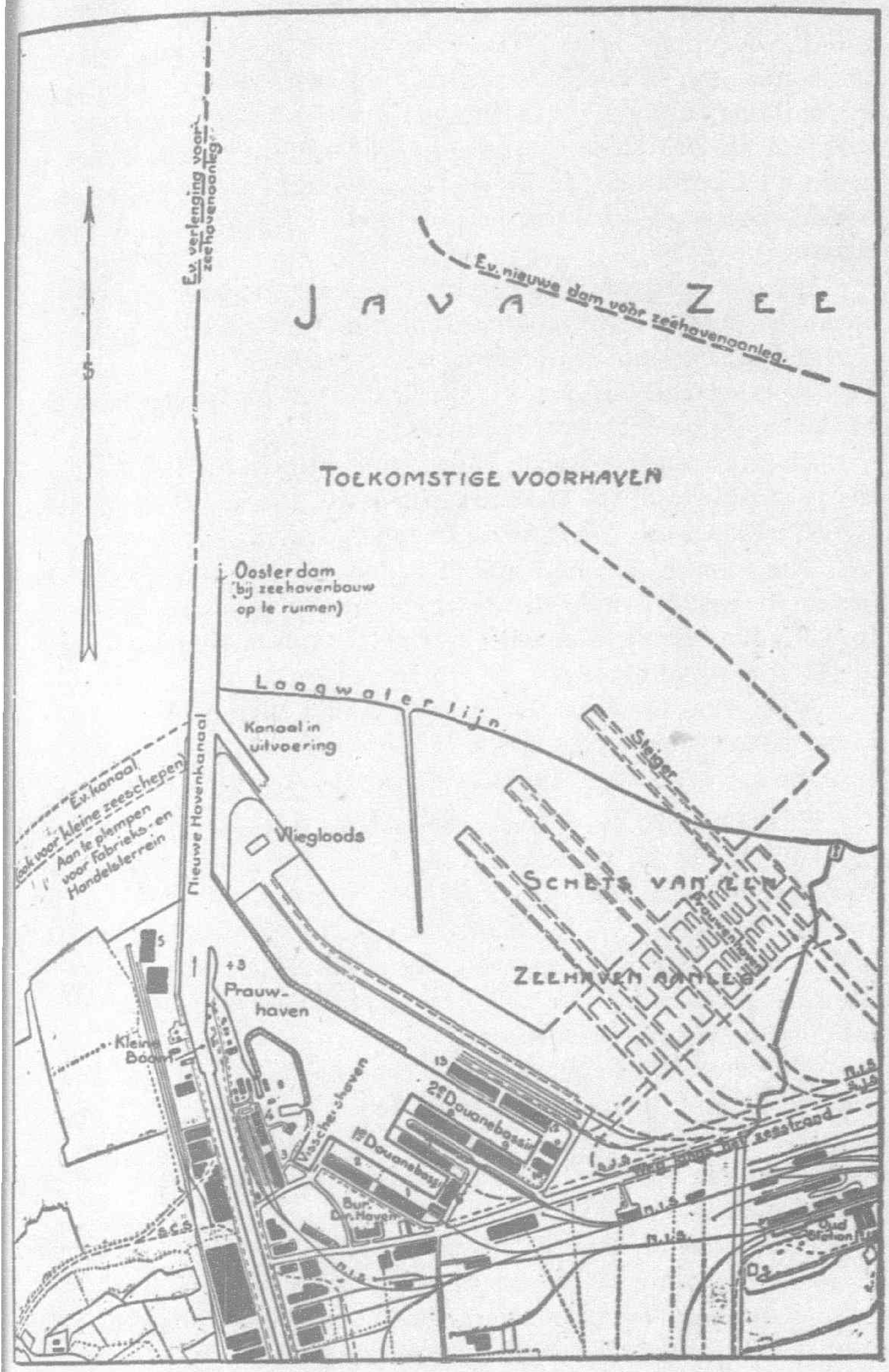
The result of this investigation justifies the construction of a seaport, providing it is confined to a somewhat moderate solution and that, among other things, the harbor dams be limited to a



Semarang, The New Proa Harbor



The Outer Harbor, Semarang


Ev. verlenging voor zeehavenaanleg
Ev. nieuwe dam voor zeehavenaanleg
JAVA ZEE
TOEKOMSTIGE VOORHAVEN
Oosterdam (bij zeehavenbouw op te ruimen)
Loogwaterlijn
Kanaal in uitvoering
Ev. kanaal voor kleine zeeschepen
Aan te plempen voor Fabrieks- en Handelsterrein
Nieuwe Havenkanaal
Vliegloods
Steiger
SCHETS VAN EEN ZEEHAVEN AANLEG
Prauwhaven
Kleine Boom
2e Douanebassin
1e Douanebassin

Plan of Semarang Harbor

depth of 5 M. Harbor dams, built out into the sea to a considerably greater water depth, would require expenditures beyond all limits. Moreover, the present state of dredging-technic makes these longer dikes superfluous, as proven by experimental tests.

Furthermore, it will not be possible to build the usual quays, on account of the very poor subsoil and the necessity of hauling the sand required for improvement of the subsoil from too faraway.

The solution will be sought by putting into practice the pier system, which predominates in American harbors. Concrete piers built out from the shore (if desired to a length of 400 M. and 40 M. or more in width), on which sheds of one or two storeys are built, having railway connections, give excellent opportunity for the mooring of the largest sea-going vessels as well as for loading, unloading and storage.

The east side of the existing harbor canal is the most suitable place for the new seaport, if only for the freight traffic of the railways, about 80 per cent. of which run in an easterly direction, and on account of the close relation which can be established between the new seaport and the already existing harbor. The direction of the piers is so chosen, that the moored ships lie with the bow to the storm direction. Towards the east side, where it is planned to reserve a spacious tract for the housing of harbor laborers, sufficient extension can be acquired for the next ten years, while west of the harbor canal, cheap, spacious tracts, with railway connections, and situated either along deep or shallow waterfronts are available for industrial purposes.

The shipping returns of Semarang for 1918 showed 875 steamers arrived with a net capacity in M^3 of 4,684,000 tons.

The total amount of goods imported and exported in 1918 amounted to 907,000 tons.

The Harbor of Tjilatjap.—This harbor is the most favored by nature of all the harbors in Java. Tjilatjap is situated on a peninsula, bounded on the east side by the Indian Ocean and on the west side by the River Donan. The mouth of this river, to which a passage gives entrance of such natural depth that ships of 7 M. draft can enter at all times and those of 8 M. draft at ordinary high tide, affords an absolutely safe anchorage, protected by the heave of the Indian Ocean by the island Noesoe Kembangan which lies opposite.

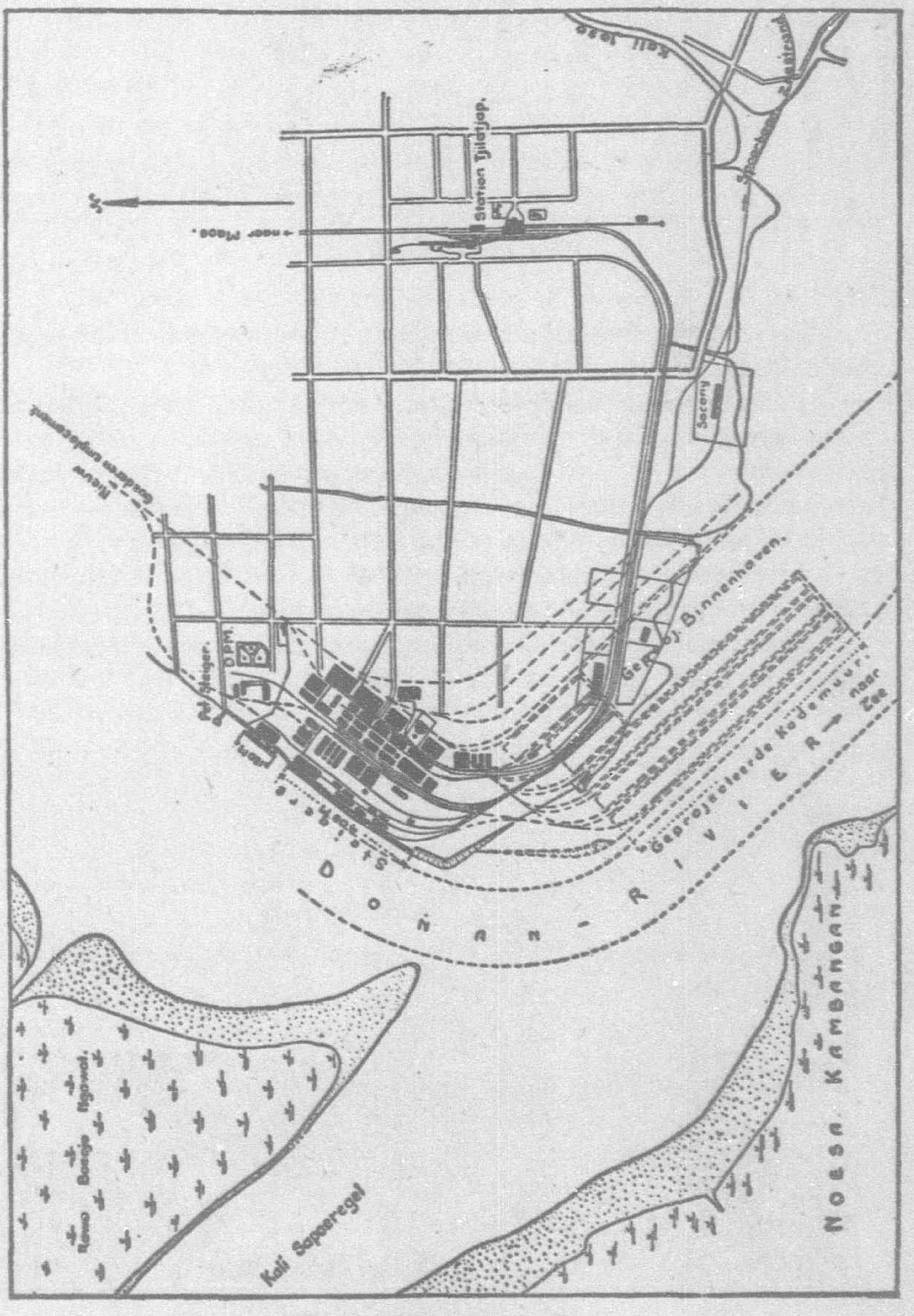
Tjilatjap's hinterland is also not without importance. In spite of all these favorable circumstances the harbor, because of its more isolated location on the south coast of Java, outside the ordinary shipping routes, has not been able to develop to the extent of the above-described harbors, situated on the north coast.

The harbor establishment of Tjilatjap in its first construction, dating from the years 1886-1888, lies 8 K.M. from the sea and in 1887 was connected with the railway system of Java by the line Tjilatjap-Maos.

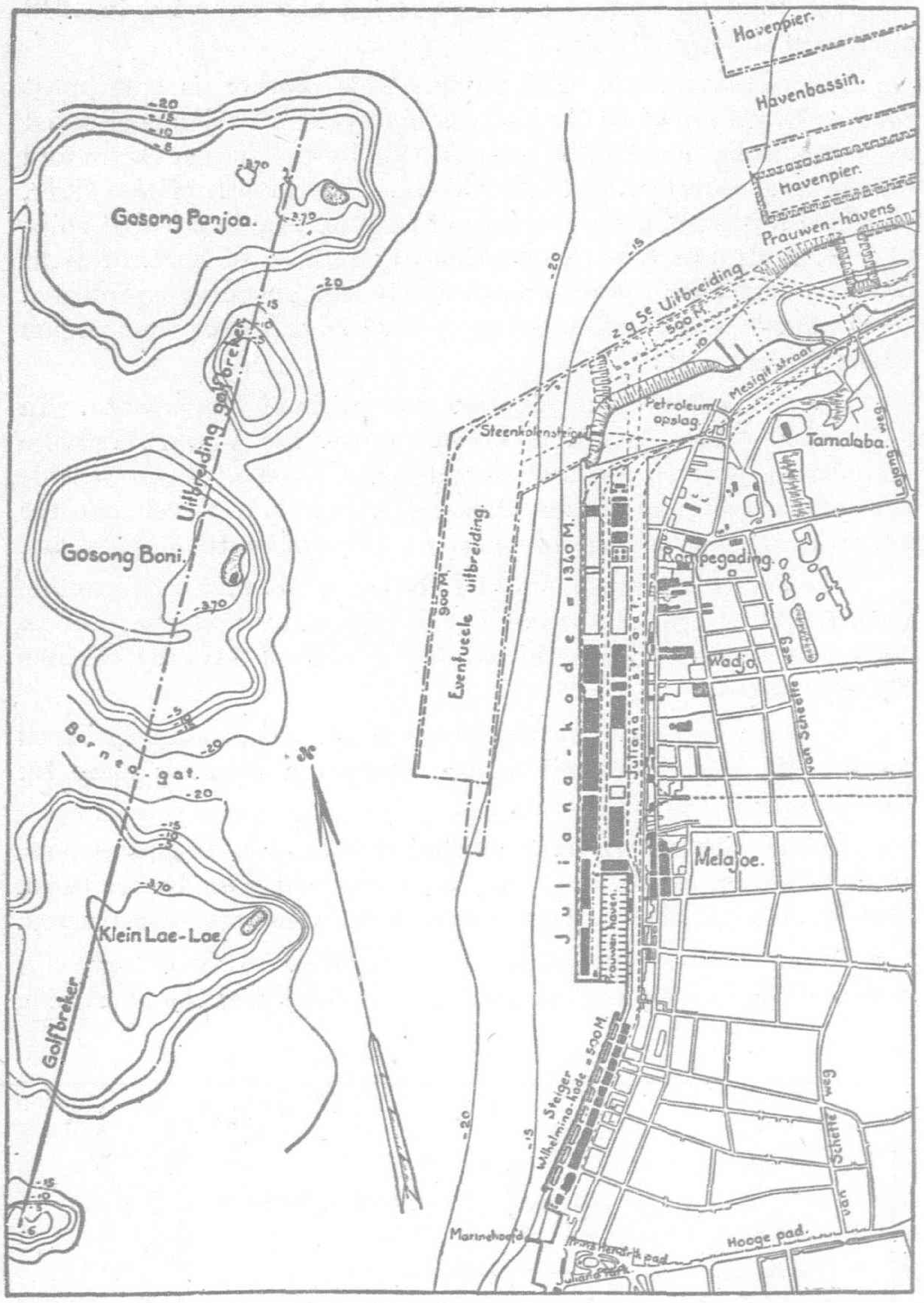
With a wharf on screwpiles about 10 M. wide, soon lengthened to 408 M., this first construction afforded a mooring place for vessels with a draft of 6.50 M.

Behind the wharf were erected storehouses, freight depots, custom-houses, coal-sheds, etc., all connected with the railroad. Besides these, a salt wharf and a petroleum wharf were constructed.

About 1910 shipping had increased to such an extent as a result of the development of the sugar industry and the flourishing



Plan of Tjilatjap Harbor



Plan of Macassar Harbor

condition of the hinterland, that an extension of the wharf length had to be undertaken.

It was decided to build a wharf 127 M. long north of the one already existing and running ahead of it into the sea, so as to give ships of 8 M. draft an opportunity to moor. The extension also included the building of two sheds with a surface area of 4,500 M^2, and improvement of the railway construction.

After some disappointment, which caused delay in the completion, the projected works were finished in 1918.

These works, also, are no longer sufficient for the steadily increasing traffic of the harbor of Tjilatjap.

New plans are already proposed, the carrying out of which will be begun in 1920. These will bring about improvement in the connection of the harbor structures with the railroad system by building, among other things, new shunting-premises, which will join an 800 M. long quay, to be built down-stream from the present harbor area. If in the future more mooring space should become necessary, this can be provided by the building of an inner harbor.

Behind the quay, for which several tenants have already appeared, besides the coalyard of the State Railways, also the necessary sheds and storehouses will be erected.

The old establishment will remain of particular importance to the development of coast navigation.

Closely connected with these improvements is the dredging of the passage and of the shallows in front of the mouth of the Donan River, which work has already been started.

The number of ships which called in the years 1905 to 1914 increased by 35 per cent., the not capacity by about 60 per cent. In 1913 the harbor was visited by 170 ships with a total capacity of 469,000 register tons.

With this increase the freight traffic kept pace, rising from round 224,000 tons (of 1,000 K.G.) in 1910 to 323,000 tons in 1914, an increase, therefore, of almost 45 per cent.

THE HARBOR OF MACASSAR.—About a quarter of a century ago only a 490 M. stretch of the beach, along which the town of Macassar extends, was provided with a quay. Most of the warehouses and offices of the European and Chinese tradesmen were found here. Six wharves from 30 to 60 M. in length were built out into the sea for the mooring of sea-going vessels, while proas could moor at four smaller wharves.

The vessels, which did not use the piers, anchored on the roadstead and loaded and unloaded by means of tongkangs, proas or sampangs, which, except for a few days in the West Monsoon, could at all times be easily set on the beach north and south of the quay.

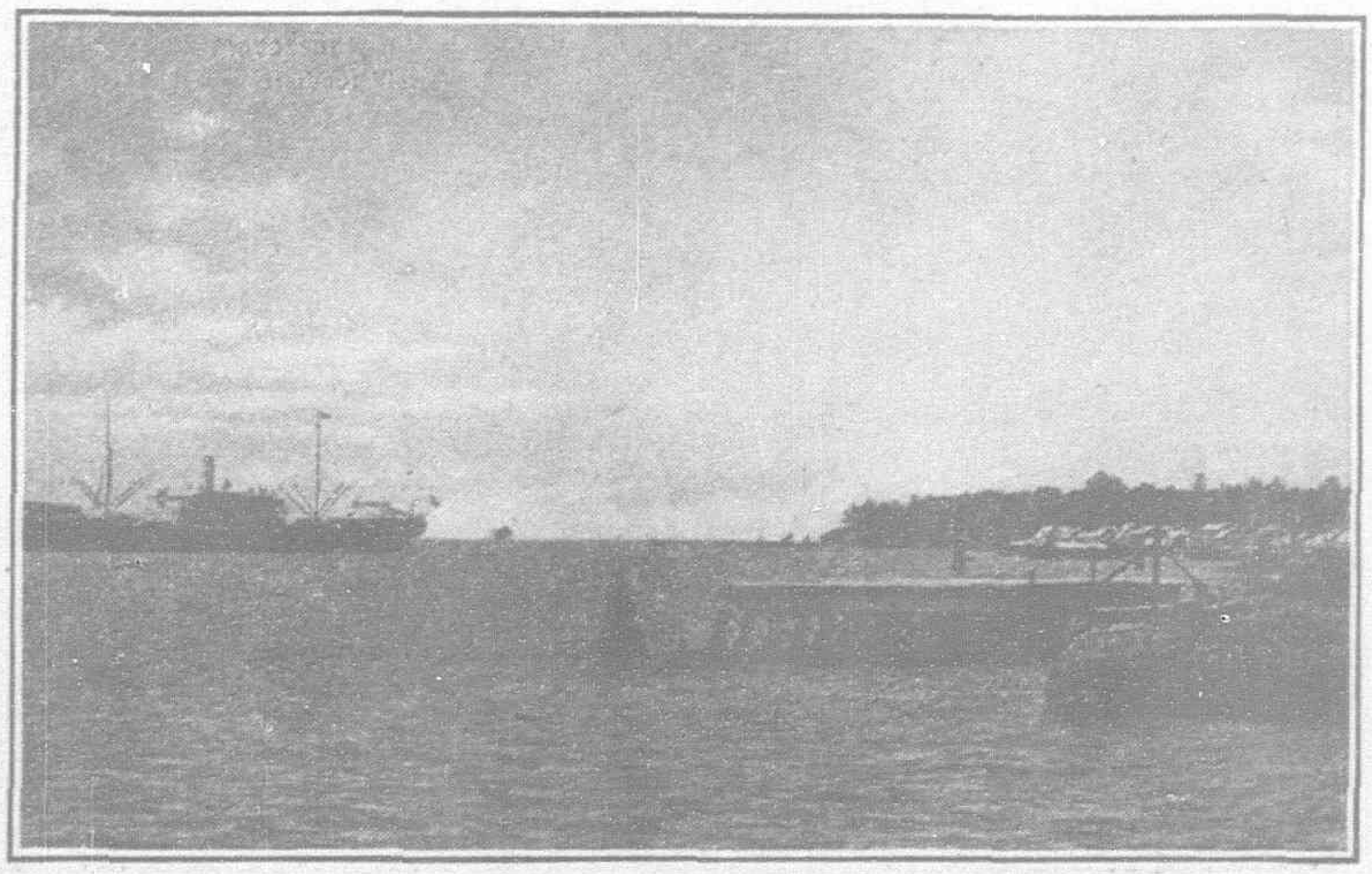
When traffic assumed considerable proportions, the number of steamers calling at Macassar more than doubled from 1896 to 1900, it became urgently necessary to provide landing facilities.

This was done by the construction of a wharf on screwpiles, 500 M. long and 10 M. wide, connected with the shore by footbridges, which wharf was completed in 1908, in spite of the many difficulties encountered.

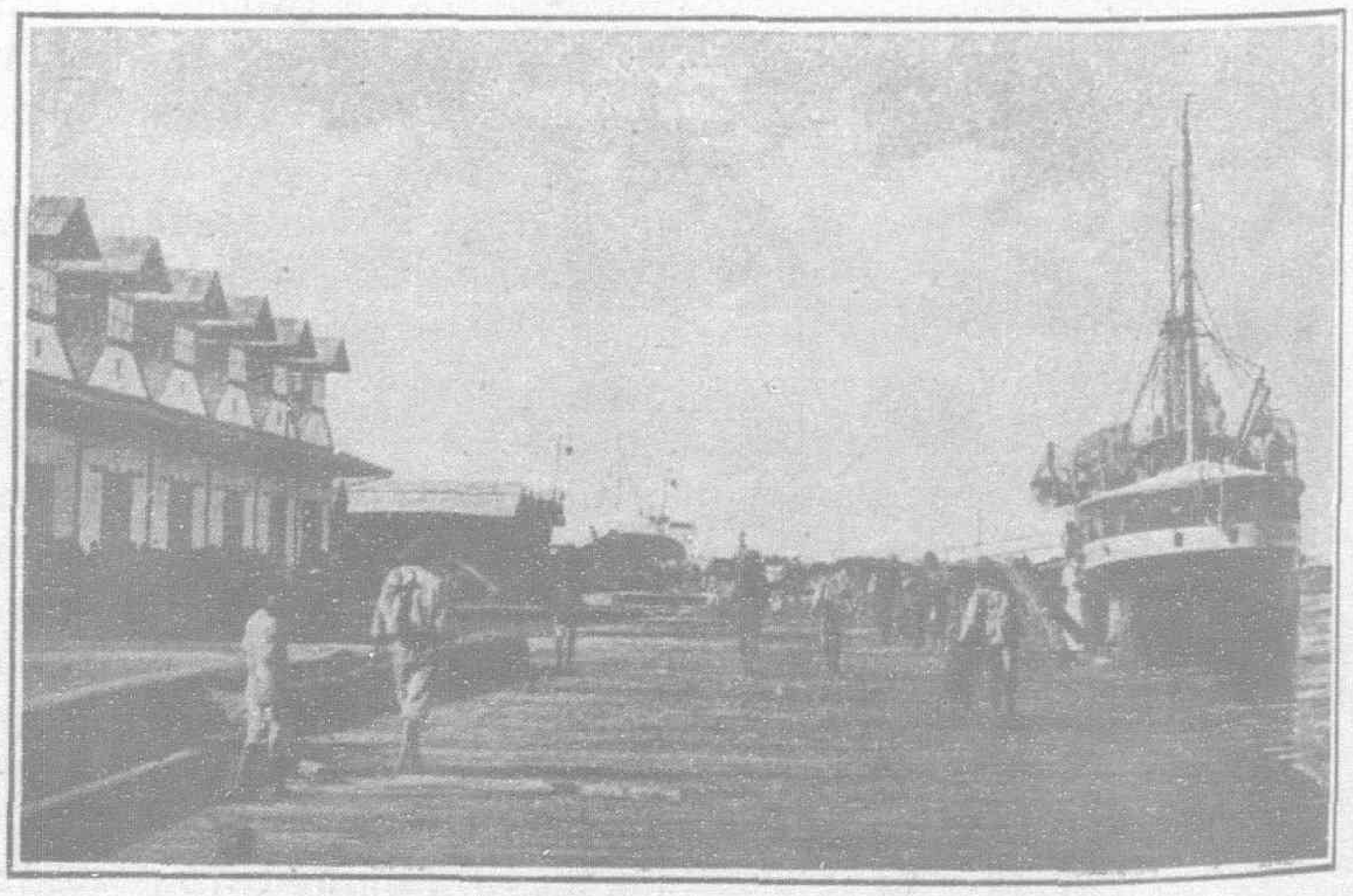
At the same time a few sheds were built.

The ever increasing transit traffic of Macassar, which by its geographical location forms the staple harbor of the eastern Molucca Archipelago, made it apparent already in 1910, that a new extension would be necessary. This has been carried out according to the plans of Messrs. Kraus and de Jongh, who were also consulted by the government regarding Macassar, in the form of a caisson quay, built out into the sea north of the screwpile wharf.

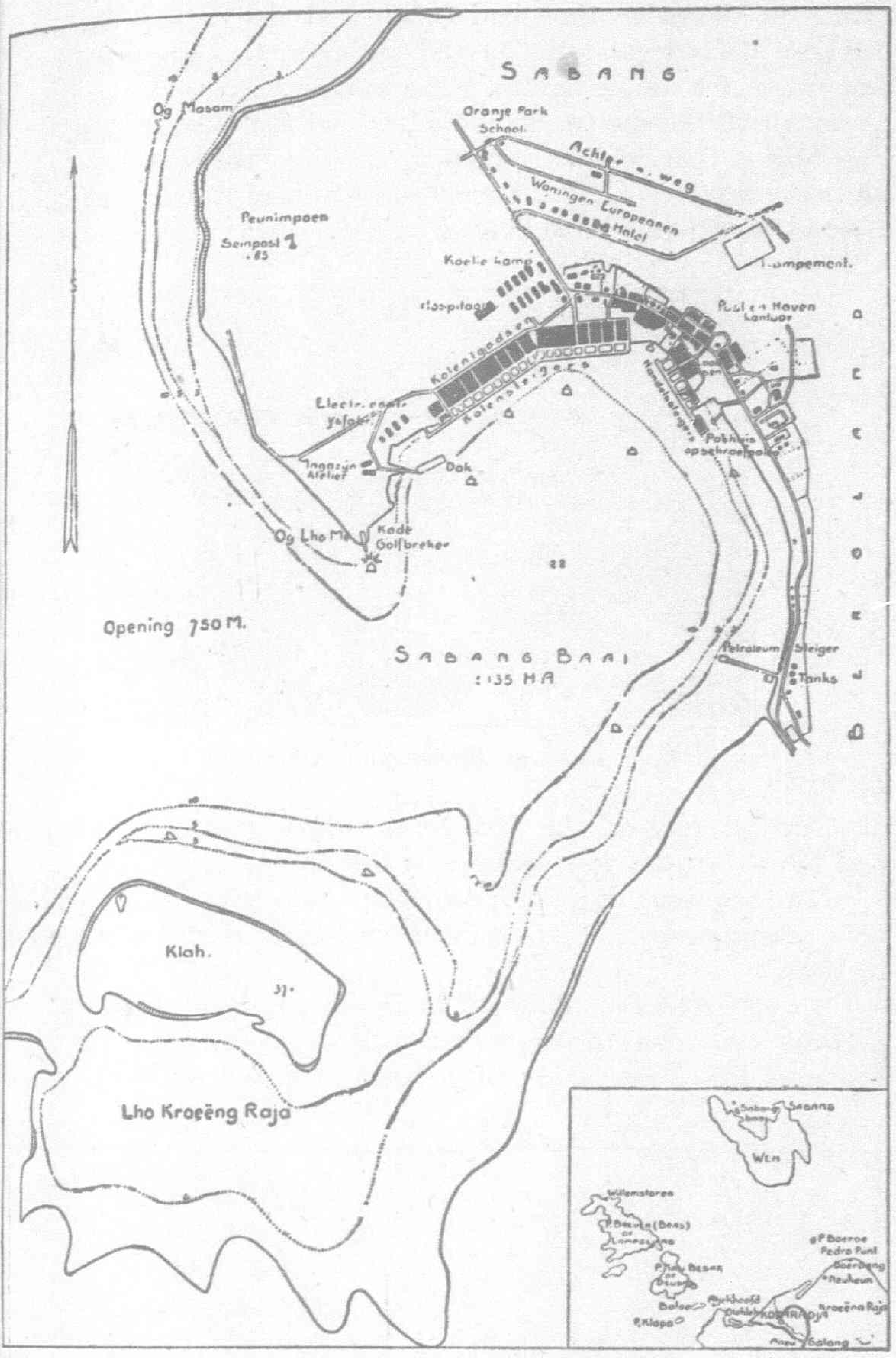
When the quay construction had once been started, it soon



View of Macassar Harbor



View of Landing Place, Macassar



Plan of Sabang Harbor

became apparent that it had to be extended considerably farther than was originally supposed. In the years 1912 to 1918 a quay 1,340 M. long was completed, offering a depth of from 9 to 10 M. to vessels at low tide. Behind this quay, which, like the screwpile wharf, was built out into the sea at some distance from the shore—for which important soil improvements had to be carried out—a tract 170 M. wide was acquired, while east of the southern end a proa harbor was constructed, 280 M. long with a water depth of 3 M.

North of the quay a tract was banked in, intended for the storage of coal and petroleum.

While the screwpile wharf was sufficiently guarded by the coral islands, which protect the roadstead of Macassar, this is not the case with the new quay. In 1919 work was begun on the construction of a breakwater over the coral banks, which will also assure vessels in the west monsoon the desired quiet mooring at the quay.

At Macassar it also happens, as is usually the case in a flourishing and growing harbor, that the demand for mooring space and storage tracts exceeds the supply.

Further extension of the works just completed must therefore be considered here also. This extension is planned east and west of the works last completed and the building of an eastern quay, 500 M. long, will be begun as well as the preparation of tracts for commercial and industrial purposes.

With regard to wind and current this quay of the so-called fifth extension is very well located and can dispense with a breakwater. If in the future still further extension should prove necessary, this can be obtained by building out a pier west of the existing quay and by constructing harbor piers and basins intended for mooring sea-going vessels north of the new proa harbor.

In connection with the plans considered regarding the building of tramways in Celebes, direct railway connection is counted on in all projects.

The total value of imports and exports for Macassar in 1917 was *f* 30,247,000.

In conclusion it may be remarked, that the harbor improvements of Macassar required up to the present time a capital expenditure of round 15 million guilders, not counting the cost of works completed by private enterprise, etc.

EMMAHAVEN (PADANG).—Emmahaven, situated in the northern part of the Queen's Bay, is the principal harbor of the entire westerly coast of Sumatra.

The main purpose for its construction during the eighties was to create an opportunity for the shipping of Ombilin coal.

Troesang Bay, situated further south, also offered a good location for this purpose. The nearness of the flourishing business town of Padang, however, gave Queen's Bay the preference over Troesang Bay, which is more favorably situated from a technical point of view.

Construction was begun at once on a large scale.

By the building of two breakwaters a harbor was formed between these and the coast with a surface area of ± 1 K.M^2.

One of the breakwaters, the smallest, having a length of 260 M., is built across a coral bank, which runs dry at low tide, about parallel with the coast, while the other was constructed in a southeasterly direction and extends into the sea over a length of more than 900 M.

The depth of the harbor and the entrance was brought to 79 dM. under ordinary low tide, so that in general ships with a draft of 27 feet met with no delay when entering, while steamers with a draft of 30 feet had an opportunity to enter twice a day. Three wharves on screwpiles, 84.60 M. in length, to which, therefore, three ships of about 125 M. could moor, a smaller wharf of 50 M. and two small wharves for government vessels and sailing vessels were built. There was also a separate location for the coal-shute, a mechanical apparatus, intended exclusively for the transport of Ombilin coal.

The three above-mentioned wharves were each 10 M. wide and built out, at a mutual distance of 60 M., alongside the shore.

Behind these screwpile wharves and separated from them by a 10 M. wide tract of ground, were erected five storage sheds and entrêpots, besides a small entrêpot for inflammable goods. At some distance behind these sheds is located the railway station, also used as postal and telegraph office, from where a railroad runs direct to Padang, which is 7 K.M. farther on. Parallel with the shore end of the 900 M. long breakwater and separated from this by an 80 M. wide tract, on which, among other structures, are a storage shed and the government salt warehouse, was built a trade wharf 50 M. in length.

The short little mooring wharves for sailing vessels and a small dynamite wharf, all three built out from the long breakwater, were also constructed.

After this, few new works have been built. The big scale of construction made this unnecessary. The sheds and entrêpots were lengthened, however, as well as the screwpile wharf (to a total of 430 M.), a new government entrêpot built and the harbor basin dredged out to a depth of 8.50 M. at low tide.

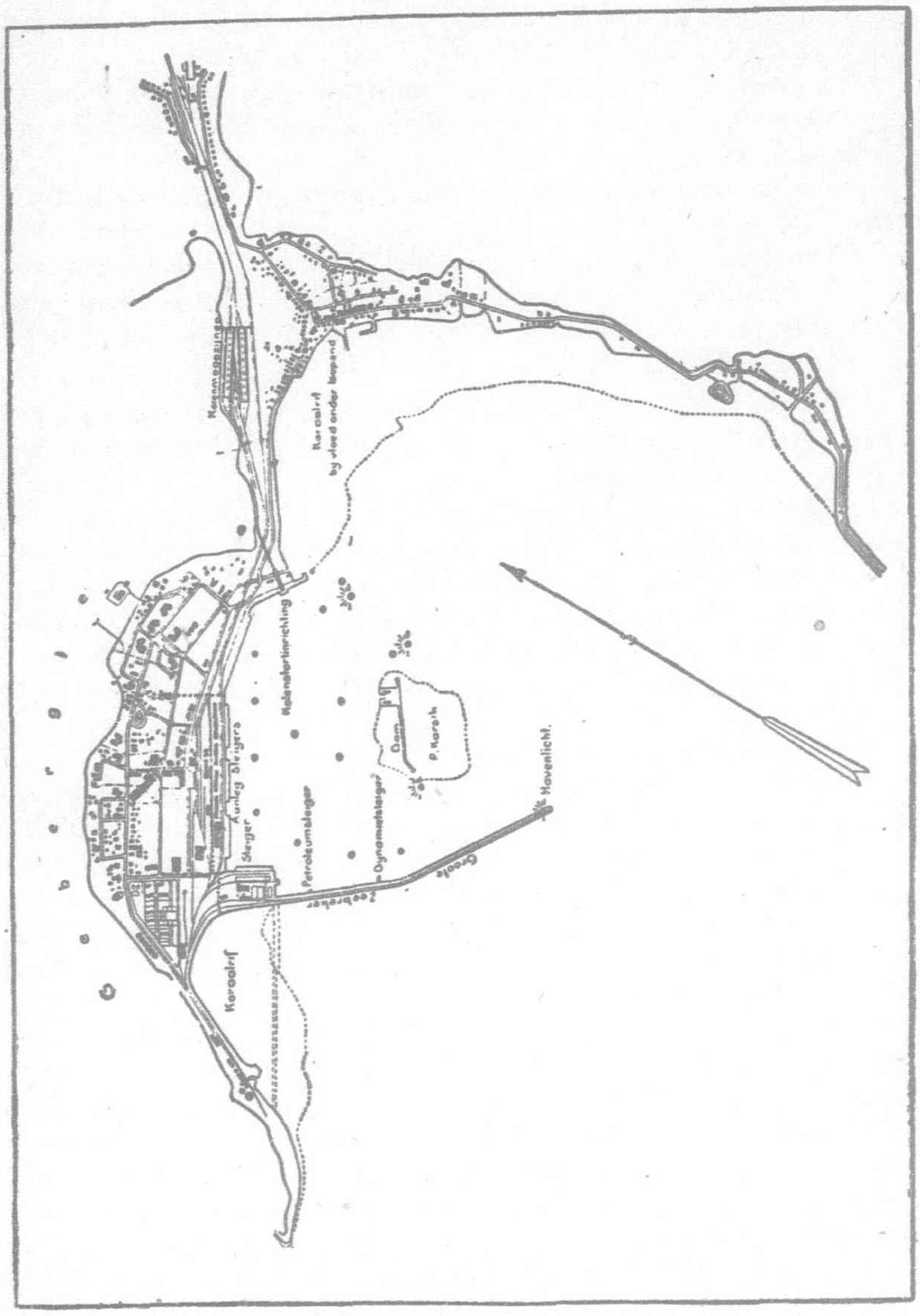
The facilities for loading and discharging coal were also improved. At present the equipment consists of:

(*a*) a coal shute with a capacity of 300 tons per hour (for bunker coal)

(*b*) two electric coal conveyers, each with a capacity of 120 tons per hour and

(*c*) a floating coal conveyer with a capacity of practically 40 tons per hour.

Apart from the coal industry Emmahaven is of importance as an import and export harbor, so far almost alone for the region



Plan of Emmahaven Harbor

directly back of the West Coast of Sumatra, renowned for its beautiful scenery.

The small native craft navigating between the islands and the coast places to the north and south, call at Padang, where the commercial houses are established.

Within a short time extension works at Emmahaven will be considered, which will include among other things the changing of the station-premises, the building of more sheds and warehouses, the raising of the karang banks, besides the deepening of the harbor basin to 9.50 at low tide. This last work has already been begun.

The value of the goods imported and exported during 1918 was 11,636,000 guilders, with a total of 1,740 vessels entered and cleared of 1,664,000 tons.

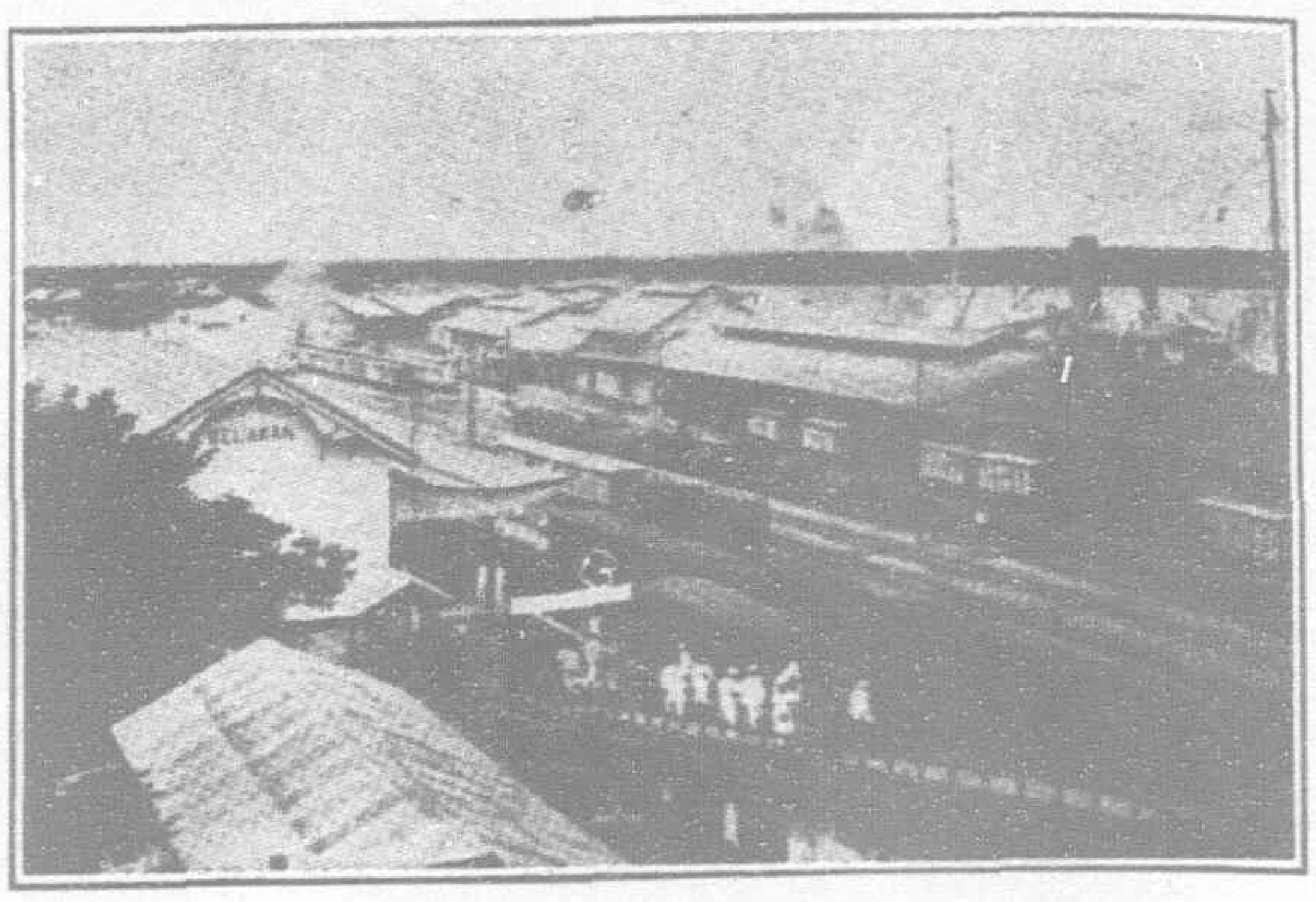
THE HARBOR OF BELAWAN (DELI).—In the whole island of Sumatra there is no province which has developed since 1883 on such a scale as the "Government East Coast of Sumatra," with the capital Medan.

This development, resulting from an enormous extension of the agricultural estates, could not fail to have great influence on the harbor towns of the province and especially on Belawan Deli, situated on the west side of the small island of that name, which is bounded on this side and on the north by the deep Balewan River and on the east by the shallow and much sand carrying Deli River.

Here, in 1890, on the initiative of the Deli Company a harbor establishment was constructed, which put an end to the method of loading and unloading, which had been in practice up to that time (lighter transport between the shore and the vessel anchored of the Belawan River).

The harbor works, constructed by the Deli Railroad Company, which at the same time had established the railway connection between Belawan and Medan and the districts Serdang and Langkat, were of a simple nature. The same was true of the government wharf, the custom-house and the private storage sheds.

Sooner than anyone supposed, however, the time came, when the narrow wharves and the small sheds formed gradually increasing obstacle to the rapid handling of freight.

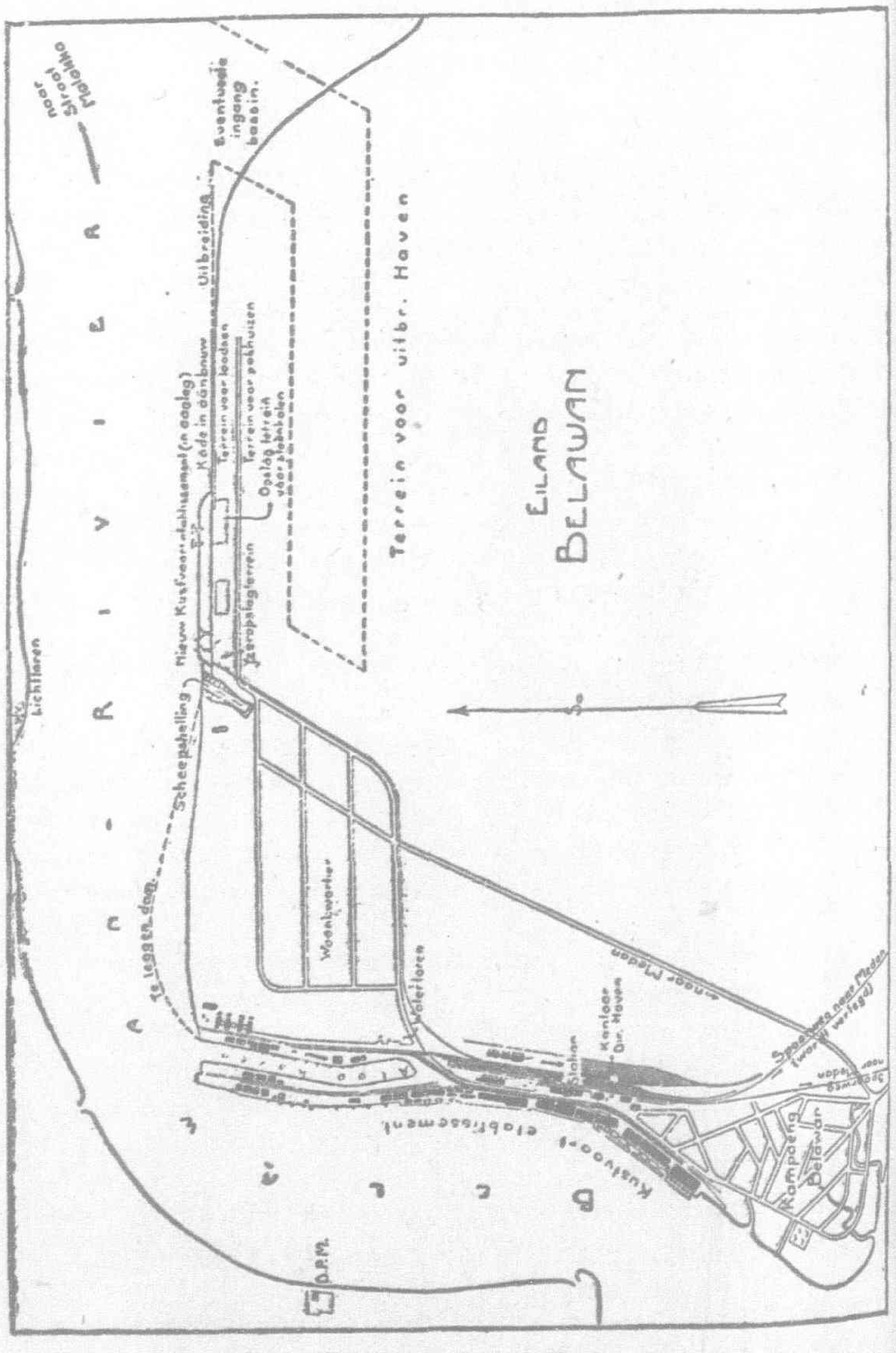


Belawan Harbor and Station

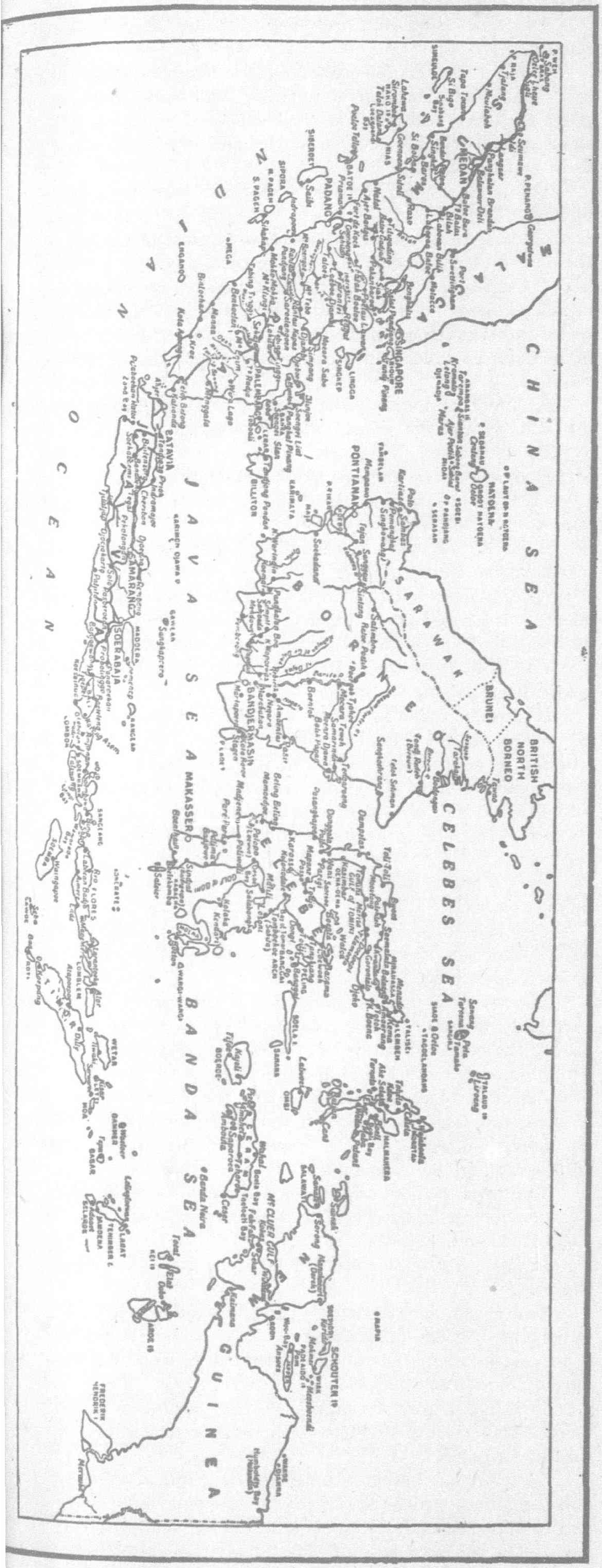
Already in 1895 the first great harbor extension took place and the waterfront was enlarged by 350 M.

The extension of private sheds kept pace with this; a considerable extension of the government custom-houses was completed in 1903.

In 1907 the Deli Railroad Company decided to make an important extension of its harbor works, to which among others belonged the construction of a basin intended for proas, which



Plan of Belawan Harbor



The East Indies

brought atap (roof thatching) from Asahan and elsewhere (atap harbor).

About 1905 the wish was made known to transfer the shipping of the products of Acheen and Deli from the Straits harbors to a port in Sumatra itself by the establishment of a coast navigation, with rather large vessels, along the North East Coast of Sumatra, which again drew attention to Belawan.

Although the first attempts to deepen out a channel in the bank before the Belawan and Deli Rivers failed, they were crowned with success, when in 1912 a mud sucker of great capacity was procured for this purpose.

The results obtained herewith were of so favorable a nature, that prospects opened up of making the Belawan accessible to large sea-going vessels or, as it was said, of making Belawan an ocean harbor.

In the meantime it was necessary to extend the establishment by building more sheds and mooring places.

At the end of 1916 there were available: 667 M. of wharfage, of which 460 M. belonged to the government and 207 M. to private parties, 10,084 M^2 of storage space, of which 5,892 M^2 was government property and 4,192 M^2 private property.

The storage space is still insufficient, however. The existing area being now fully built up, further extension can only take place on the new coast navy yard, located west of the ship-building yard. A shed of 3,300 M^3 with a warehouse (entrêpot) back of it are already being built. Besides, the building of a storage for steel and iron with landing-stages in front thereof has also been started.

Still further extension must be considerd, however. Various factors indicate, that it is not too bold a guess, that within the next few years a total import of 300,000 to 350,000 tons and an export of over 100,000 tons may be counted on, thus a total freight traffic of round 450,000 tons must be handled at Belawan.

When it is taken into consideration, that already in 1917 the harbor-works were no longer sufficient for the export and import traffic (300,000 tons), then it is plain, that, if commerce and shipping are to be allowed to develop unhindered, important extensions in the near future are decidedly necesary.

To carry out these works there are two ways open:

1st. An attempt can be made to transfer a part of the traffic to the smaller harbors of the province, by improving or extending the existing works according to requirements.

2nd. An attempt can be made to draw the traffic as much as possible to Belawan, by taking care, that the harbor facilities there shall fully meet the requirements, which may reasonably be demanded from these works in view of the freight traffic to be expected in this case, wherein it goes without saying ocean-going steamers must be enabled to be moored directly to the landing-stage.

If both solutions are compared, one is soon inclined to give preference to the last named alternative. Not only has experience taught the superiority of the latter method over the former, but by putting it into practice the transloading from coast to ocean steamer is avoided, which is of main importance for Belawan, in which harbor three-quarters of the total import of European goods and rice takes place via the English transit harbors Penang and Singapore. Further development is therefor being done in this direction.

In 1918 a 485 M. long caisson quay was contracted for along the Belawan River, located on the same shore as the establishment for coast navigation but farther downstream.

By the installation of a second mud sucker of still greater power and capacity than the first one, in 1919 an even depth of 73 dM. at ordinary high tide and 65 dM. at low tide were obtained. Ships of 20 feet draft can therefor enter at all times and those of 23 feet at high tide. The dredging work is being carried on continuously.

The river in front of the caisson quay will be dredged out to such a depth that ships with a draft of 9.50 M. can remain moored at the lowest tide.

Behind the quay the usual railway connections, cranes, sheds, living quarters, industrial tracts, etc., will be put in order.

As it is already apparent, that the 485 M. of quay length is only sufficient for a third of the applications made, the wall must at once be lengthened in an easterly direction. Later an inner basin may be constructed, which may either be provided with quays of the ordinary type or with piers, as is the custom in America.

In 1918, 1,100 steamers of 1,141,000 tons capacity entered and cleared from the port.

The Harbor of Sabang.—On account of the purpose for which it was built, this harbor in some measure falls outside the range of the seven harbors already described.

The harbor is situated on the island of Poeloe Weh, about 50 K.M. north of Kota Radja, the capital of Acheen and was built in 1887 by the firm De Lange of Batavia, supported by the Netherlands Trading Co. (Nederlandsche Handelmaatschappij), after the latter had obtained a concession to establish a coaling-station on the bay of the above-mentioned name.

The exceptionally favorable situation of Sabang with regard to world trade, close to the entrance of the Strait of Malacca, was a favorable factor for the purpose which the owners had in view, namely, the etablishing of a coaling-station and a place for transhipment.

That part of Sabang Bay, where the harbor-works are built, is sheltered against heavy breakers and dangerous winds by mountains and higher stretches of coast. Dams and breakwaters were therefore unnecessary.

The entrance to the bay at its narrowest point is 750 M. wide; a water surface area of 1,500 by 900 M. offers an excellent, not too deep anchorage and can accommodate at least 25 small or 12 large vessels, of which 6 can be moored to piers and 6 other ones to buoys. Between the island of Klah and the shore there is also available anchorage for smaller vessels.

In 1896 two wharves were built on screwpiles for coal loading ships, with the thought in mind, that they must be of a permanent character so as to allow opportunity for further expansion. In 1898 a floating dock with a lifting power of practically 2,600 tons was brought here from Sourabaja as a gift from the government, which in return obtained the right of free dockage for her vessels.

In the same year the Sabang Bay Harbour & Coaling Station, Ltd. (Naamlooze Vennootschap Zeehaven & Kolenstation Sabangbaai) was established, which under the supervision of the Netherlands Trading Company (Nederlandsche Handelmaatschappij) took over the exploitation of the harbor from the firm De Lange.

The real growth of Sabang dates from 1903, the year in which were completed the extension of the harbor-works, including the equipment, workshops and buildings necessary to cope with the steadily increasing traffic.

The screwpile wharf for coaling was lengthened to 550 M. Back of this were built 16 double coalsheds, 24 M. wide and 46 M. deep, besides 5 warehouses. Five electrical, movable portal-cranes considerably increased the working capacity of the establishment. The cranes can be moved along the quay and on the shore side extend for a length of 100 M. over the coalsheds while on the harbor side they reach beyond pier and ship. With these cranes it is possible to unload a vessel of 7,000 tons within three days.

Besides the coal conveyers the Sabang Company has also owned since 1912 a 900-ton bunker lighter, with a loading capacity of 300 tons per hour.

Behind the drydock, besides various buildings such a workshop, storehouses, ice-factory and electric power house, there are also workshops for the repairing of vessels and machines, which shops are profitable to the exploitation of the dock.

In addition there are slip-ways for the building of small steamers, motorboats and lighters, up to 1,000 tons.

Aside from the coaling industry the Sabang Company has built a special small wharf for the ferry service to Oellee-Lheue, besides 200 M. long trading wharves for transhipment and spacious warehouses. While most of these latter are built on the shore, one is placed on the wharf itself. Alongside the hills near the harbor establishment the company has erected various buildings, shops, offices, a hotel, etc.

The new petroleum establishment has been built entirely separated.

Between this establishment and the existing works the necessary space for extension of mooring facilities is available. This part, however, not being so well sheltered against the weather, the new construction will be of the pier type for vessels with a draft of 12 M. or less.

Up to the present all these works have been carried out by the Sabang Company, in this way that since 1911 the Netherlands East Indian government has taken over most of them and given them out in long lease to the Sabang Company.

The agreement is of this nature, that the above-named company obtains money for new construction and upkeep at the easiest terms and that the government (which is interested to the extent of more than 2.4 million guilders) gets a certain share of the profits received.

As already remarked, the main business of Sabang is the coaling industry and the transhipment of cargo.

In 1912 and 1913 the amount of coal imported and exported amounted successively to 420,000 and 450,000 tons of 1,000 K.G., which business in 1915 (due to the influence of the war) decreased to 268,000 tons.

In 1913 there were also handled 30,000 tons of petroleum and 150,000 tons of other goods.

Among these were tobacco, from the East Coast of Sumatra, which was carried from Belawan by coast-vessels and transhipped into ocean-steamers, i.a.; those of the Netherlands Steamship Co. From 1905 to 1910 about 100,000 bales of tobacco were shipped yearly from Sabang to Europe.

It must be taken into consideration, that the consumption and production of the island Poeloe Weh, on which the harbor is situated, is almost nihil, and that therefore the same goods arrive and depart, so that all goods are estimated twice. Thus in 1912 only 210,000 tons of coal were delivered.

In 1918, 479 steamers of 1,091,000 tons capacity called at the port.

Only a few of the middle-sized harbors are discussed in the following article.

The Harbour of Cheribon.—Cheribon situated on the great bay of Cheribon, sheltered from the west monsoon, was already in olden times a place of importance.

The favorable natural situation of the harbor brought about very little necessity for the construction of expensive harbor-works during the course of the year. Vessels anchor in the roadstead, while proas provide for the connection with the shore. These proas are now of such dimensions that the loading and discharging of cargo can take place without too much loss of time. They can be moored directly to the shore; landing-stages, warehouses, cranes, etc., are here available.

Two proa harbors afford the necessary mooring place. Care is taken for an undisturbed passage of the proas from the roadstead to these harbors.

In 1918, 478 vessels of 2,181,000 tons entered and cleared from the port.

The Harbor of Banjoewangi.—Banjoewangi is one of the important harbors of East Java. The harbor is provided with a proa basin, simple piers built out into the sea and the necessary harbor tracts connected with the railway.

The Harbor of Amboina.—Already centuries ago the commercial traffic of the Mollucca Archipelago centred in the provincial capital Amboina.

The Bay of Amboina is about six nautical miles wide at its entrance, then widens noticeably to become more narrow again and to afford a small entrance to a harbor from 12 to 19 fathoms deep. On the east side of this, along the sheltered roadstead, extends the small town of Amboina.

On the south-west side of the inner-basin are a few harbor structures, which have been considerably improved during the last few years by the building of a concrete pier and the equipment of a harbor tract affording space for various storehouses.

The harbor tract is directly connected with the business centre by a wide road.

THE HARBOR OF MENADO.—In spite of the great difficulties, to which freight traffic is subjected at Menado through silting and a sandbank, which lies at the mouth of the Menado River, trade and shipping are advancing rapidly due to the prosperity of the regions which surround the harbor.

Not only the northern peninsula of Celebes, the Minahassa, forms the hinterland, but the Sangir and the Talaud Islands and Bolang (Mongondon) must be also included.

Now that Menado is touched by ocean steamers sailing to Japan and East Asia, the products from Gorontalo, from the stretch along the Tomini Gulf and perhaps also those from Ternate will be shipped to this harbor.

In this respect, based on what has already been reported, great expectations may be entertained for the future.

Besides the more urgently necessary harbor improvements, which are being actively carried on, plans are already being considered for the construction of a harbor accessible to sea-going vessels. The harbor will have to be constructed landwards and will therefore demand large expenditures.

As soon as it becomes apparent that commercial traffic has assumed such proportions, that such expenditure will be profitable, a beginning will be made towards the realization of these plans.

THE HARBOR OF BANDJERMASIN.—Bandjermasin, the capital of the residency south and east division of Borneo, lies about 30 K.M. from the mouth of the Barito river and on the western bank of the Martapoera River, 9 K.M. from the junction of both rivers.

The situation of Bandjermasin with regard to the hinterland is very favorable for trade by reason of the navigable waterways on all sides. The place is the storage for the products of the enormous river basin of the Barito, a very lively goods-circulation taking place.

Especially the export of lumber and coal have very much increased during the last few years. While the lumber export in 1915 amounted to 10,000 M^3, during 1917 this rose to 58,000 M^3 and this figure will considerably increase as a result of the many wood-felling concessions granted and soon to be exploited. The export of coal in the last few years gives even more significant figures. While in 1915 only 2,000 tons of coal were shipped from Bandjermasin, in 1916 this figure rose to 19,000 tons, while in 1917 even 53,000 tons were shipped.

THE HARBOR OF PONTIANAK.—Pontianak, the capital of the residency west division of Borneo, is located 19 K.M. from the sea, on the left bank of the small Kapoeas River, one of the delta branches of the large Kapoeas River.

Founded in 1771, the town has properly developed, thanks to its extremely favorable location on one of the best navigable mouth branches of the mighty river.

The harbor establishment consists of an almost 500 M. long and 6.25 M. wide landing-stage with sheds and offices in back of it, all constructed of wood.

A small drydock is also being built on the right bank to replace a similar construction, which became worn out.

On this right bank there are in addition coal storage places with a wharf, and tracts for oil storage.

THE HARBOR OF PALEMBANG.—If one sails from the Straits of Banka into the Moesi River, which has an average width of 1,000 M. at its mouth, after 90 K.M. of steaming along this mighty river one arrives at the provincial capital Palembang.

The fact that this is the junction of a number of large rivers, navigable for hundreds of kilometres and along which one can penetrate deeply into the fertile hinterland, readily explains that an extensive business centre was formed here.

The harbor establishment for the sea-going vessels is directly downstream from the city, extending along both banks of the river Moesi, which at that point is 400 M. wide.

An opportunity for mooring is afforded by a landing-stage on screwpiles 250 M. long and 11 M. wide, connected with the shore by means of three foot-bridges. The depth of the water at this landing-stage is at least 10 M. at low tide.

Behind the wharf a spacious tract is available, partly taken up by storehouses and custom-house sheds, with a total area of round 3,000 M^2, while for extension a tract located upstream has been reserved.

Besides this establishment Palembang has a number of larger and smaller mooring-places.

Upstream at the end of the built-up part of Palembang and at the junction of the Ogan and Moesi Rivers the terminal point of the South Sumatra Railway is to be found. For the need of sea-going vessels which sail up to this point, a wharf is constructed, where the goods brought by railway can be directly transloaded. Adjoining this there is a coal conveyer for the shipment by steamer of the coal from the Lematang coalfields, which are exploited by the government.

To overcome the difficulties presented by shallows at the entrance of the Moesi the digging of a canal 5 K.M. in length is being considered, which will connect the deep part of the river with the Banjoe-Asin Bay. This gulf generally offers a quiet water area of sufficient depth for most of the big ocean-liners.

Besides the canal a transloading station for ocean navigation might be established on the aforesaid bay.

Investigation of these still vague plans for the future is being actively carried on. In the meantime, in expectation of the outcome of this investigation, present conditions are being improved as much as possible by dredging the most shallow parts of the Moesi.

For Anything Affecting Industrialism

OFTTIMES a little shadow of a memory flutters before the consciousness, so illusive as to disappear entirely if too desperate an effort is made to secure it. Something vaguely remembered, something that would render a task less difficult were it stripped of its impenetrable aura, something to reimburse, to augment, could it be secured, and there were no need of such a weighty and authoritative volume as "The Subject Index to Periodicals" issued by the Library Association, Stapley House, 33 Bloomsbury Square, W.C. 1., London. But the brain is a recalcitrant bit of mechanism, and if too brusquely used makes evident its relationship to the mule. It will not reveal the little something that is intangible and so desperately needed. A helper is required, a little clue, and the desired is at hand.

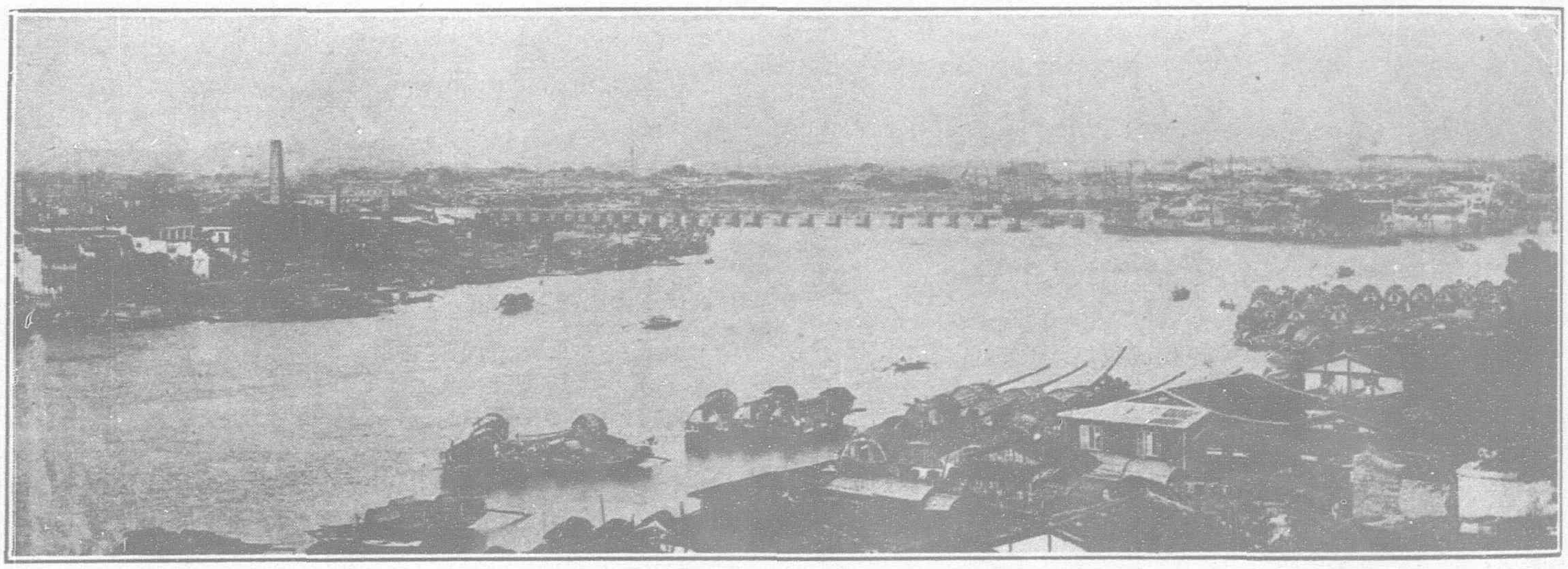
Eastern affairs occupy much of the world's attention now as ever. There comes a time when so-and-so's article on exploration in China is wanted, when something on the foreign policy of China would be of use, and if the mind refuses to obey consciousness then that matter can direct its attention to such a book as that above referred to and full details as to when and where the article appeared can be obtained. And if it is not something on the East which is required, if it has anything to do with the historical, political and economic sciences of the whole world, then its sponsor, date of appearance and other particulars can easily and quickly be found if the pages of the Library Association's volume are consulted. Such a book is a great boon to any and all who might be interested in the trend of world events for it gives them complete access to all that has been written and which can be called of importance in the fields of history, politics and economics, complete access in that the article required can be located, and thus obtained by communication with the owners of the issue in which it appeared. True, it is not good to rely greatly on mechanical means to assist the consciousness against its measure of strength with the mind, but there comes a time when they must be enforced, and at such time, and if the subject required has to do with the sciences as have already been enumerated, then no better guide can be consulted than "The Subject Index to Periodicals."

The Province of Fukien

By Rev. J. E. Walker, D.D.

ORIGINALLY the region now covered by Fukien (Foo-kyen) was a part of the Kingdom of Yueh; and under succeeding dynasties was sometimes part of China, and sometimes not. A century B.C. it formed part of an extensive independent region along the south-east sea coast, which was gradually brought again under Chinese sway. During the distracted times preceding the rise of the Tang dynasty, 618 A.D., it was again independent; but the Tangs recovered that whole south-east sea coast; and Fukien became a permanent part of the Middle Kingdom.

It is also styled in fine writing the Min province. Min was the name of a species of snake; and, according to Williams' Dictionary, this name contains an allusion to an ancient fable that the aboriginies south of the Meiling range were sired by a snake; and "*Seven Min* was a name for the old tribes of Fukien." This province lies *east* of an extension of the Meiling; but seemingly the Fukien tribes were classed with the Kuangtung (Canton) tribes. I once heard an earnest Chinese Christian tell his neighbors: "We of this region were the original foreign spooks."


Granite "Bridge of Ten Thousand Ages" at Foochow, Nantai

In the Foochow dialect Tang is pronounced Tong, and the men are called Tong-puo, i.e., Tang-fu, Tang men or husbands, while the women are styled Chü-niong, i.e., Chu-niang, Chu ladies or wives, as if the Tang soldiers had killed off the Chu men, married their widows, and settled down in Fukien. In the Shaowu region nearly all, if not quite all, the people are descendants of immigrants from north of the Yangtze river. People in different sections differ in looks as well as speech. Foochow folks have a lighter complexion than do the Shaowu people; and those who live along the south-east sea coast region have different features; and some wear turbans as do some Honanese.

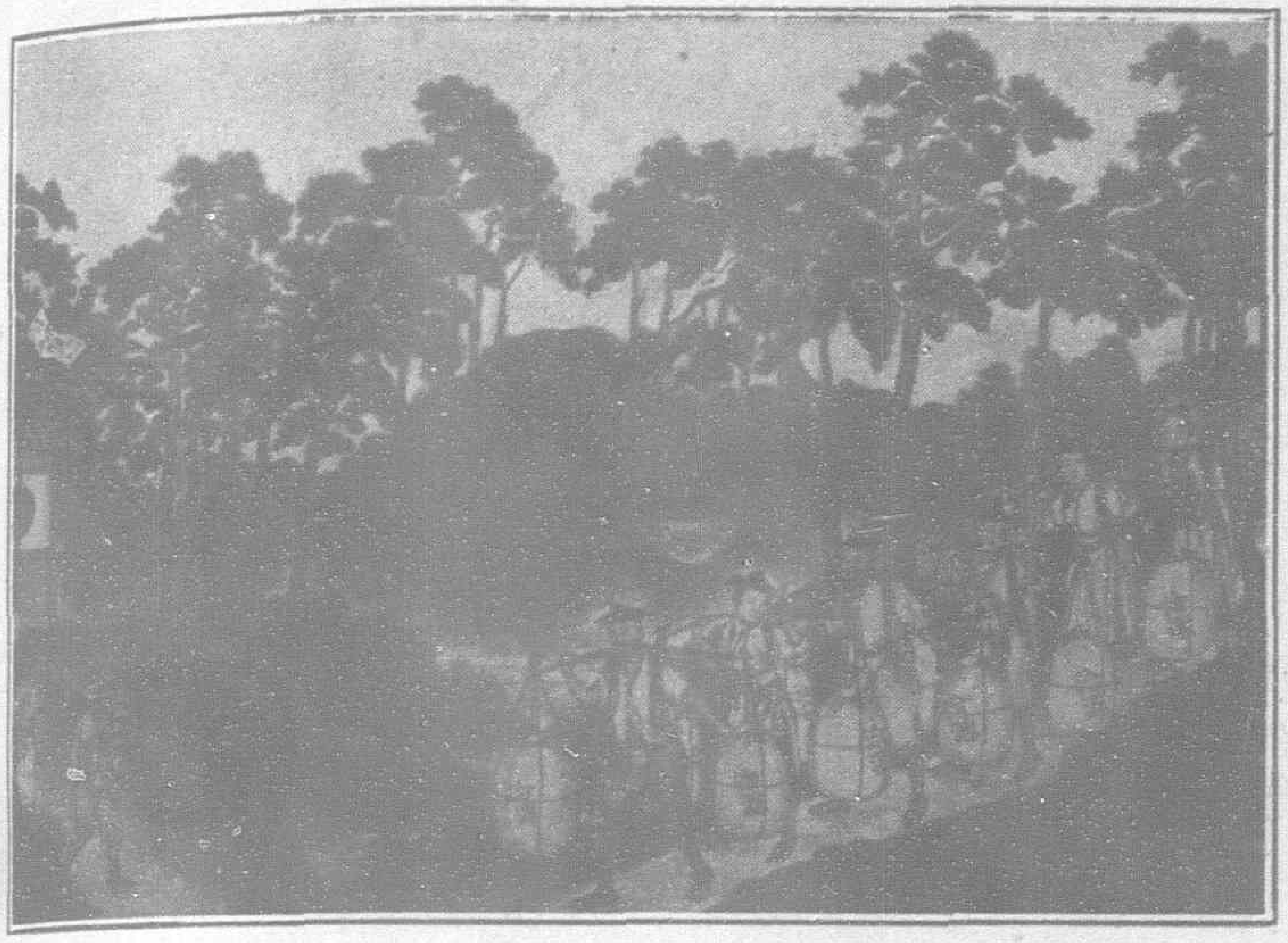
In Fukien there are differences in traits of character as there are differences in dialects. At Foochow when a fire breaks out, the "fire hawks" rush in to plunder, while at Shaowu the neighbors rush in to put out the fire; and any down river man who should come prowling around would be roughly handled. In coming up the Min River, for the first one hundred and forty miles, if a boat is wrecked, it is plundered outright; but above this distance everything would be salvaged, and held for ransome at about one-third its estimated value.

In the interior of the province we sometimes find a village which is named after folks of a certain surname, and yet there is now not one family of that surname living in the village; just as it would be with us if a certain village were named Parkersville and yet there were not a single Parker living in the village.

In the name Fukien, *Fuh-kien*, the *Fuh* is taken from the *Fuh* in Fuh-chou (Foochow), and the *Kien* from Kien-ning Fu, the most important inland city on the upper Min. As a rule the provinces of China take their names from some geographical feature or location; but Fukien is an exception to this; and doubtless the auspicious combination formed by the two words (Happiness Established), accounts for the choice; for Kien-ning Fu would only equal a suburb of Foochow, and is much smaller than Amoy and some other cities on the south-east sea coast.

The Chinese description of the world as three-tenths mountain, six-tenths sea and one-tenth field, well describes the mountains and fields of this province. A map of the rice fields of the Min valley would resemble the veins of a leaf. Up through all the valleys and along all the brooks and rills, wherever there is soil and running water, there the rice terraces are found. Sometimes they wind along and around the hillsides, a rod or so wide and many rods long. And as the valleys retreat, they climb higher and higher till the last spring is reached, or the mid-summer temperature becomes too low to mature the rice. The small plow and harrow slowly dragged along by one cow or buffalo for planting, and the sickle for reaping, are the only tools available for such rice culture. Yet inventive genius has solved harder problems of applying useful machinery than that which confronts us in the countless rice terraces of the Min valley and many other such regions.

As a rule hill side terraces produce only one crop a year; but through the winter and early spring they are kept covered with water; and often we see in them large patches of a luguminous plant which helps to enrich them. Hence full crops are grown in them from year to year with little other enrichment. On more level ground a crop of early rice is followed by one of beans; or the hills of rice stubble are heaped up in rows, those from one row or two on each side being piled up on a central row. Sometimes when three or four young farmers have finished such a job they make a frolic of it, and heap up the last lumps in pyramids a few feet high. On such ground wheat is sown as a winter crop, or rape seed in the early spring. Rape seed oil is much used in cooking. Near towns and cities the fullest use is made of night soil for two crops of rice, or crop after crop of some kind, the year round.



Hillside Tea Moving Citywards

Sifting, Weighing and Storing Crude Tea

Where two crops of rice are grown, the second crop is set out between the hills of the first crop and grows very slowly till the first crop is harvested; and then it shoots up very rapidly. Southern Fukien produces much sugar, and the raising of cotton is on the increase in various regions.

Fukien is subject to high floods. This is marked on the Min river which drains a wide spread valley. Once in Oregon a returned soldier from Manila remarked to me, "Folks here don't know what rain is." Fukien rains cannot equal Philippine rains. But they are a good second. History tells of an army that perished in the "Foochow marshes." These marshes are now very productive paddy fields, but are liable to severe damage through floods.

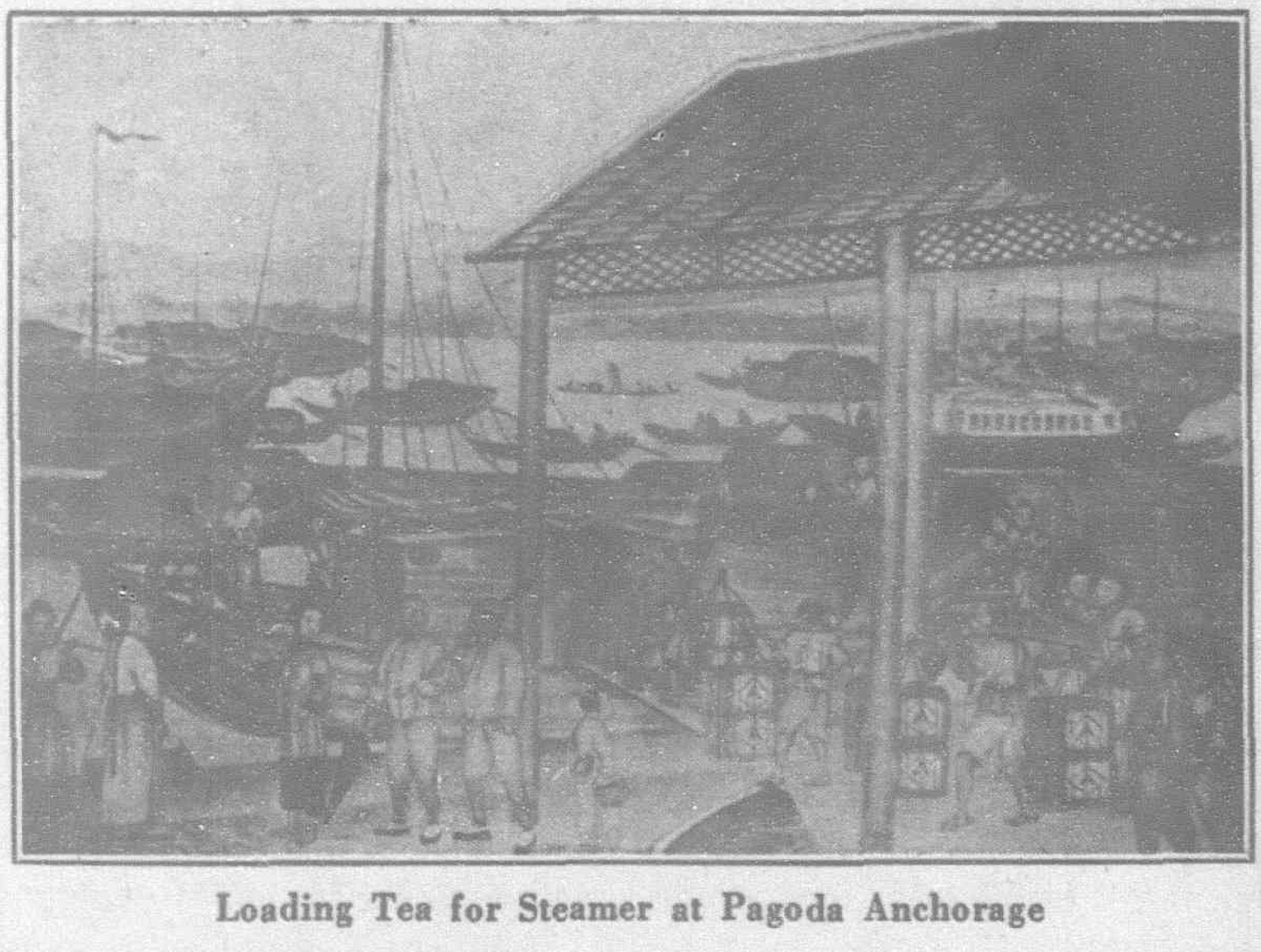
The Jesuites had quite a correct map of this province. Its main river is the Min which drains about one-half of it. At its mouth, high tide rises 19 feet; at Foochow, 30 miles up, it is half this, and is felt for about 20 miles farther up. Steam launches and house-boats ascend seventy miles above Foochow to Shui-k'ou; and it might be made navigable even up to Yenping 70 miles above Shui-k'ou.

At Yenping the river branches, and the northern branch coming down from Kienning Fu drains six or seven counties. The southern branch drains some eleven counties. Ten miles above Yenping the river again divides, the Sha or "Sand" river, which drains about 5 counties, coming in from the south. About forty miles above the mouth of the Sha river at Shun-ch'ang city the central branch again divides, the Shaowu branch coming in from the N. W. It drains two and a half counties. The central branch of the Min comes in here from the west, and drains three and a half counties. It is *The Min.* A Japanese map of Fukien, which I have, omits this central branch. The Kienning branch has been called the Min; but this is like the case of the Mississippi River in America, which at its junction with the Missouri is much smaller than that river yet gives its name to the combined streams from there on to the sea.

In ascending from Foochow to Shaowu we find three belts of climate. The first belt extends from the sea to Shui-k'ou, 70 miles above Foochow, where the river cuts through an irregular chain of mountains, the peaks of which rise to the height of 3,000 to 4,000 feet above sea level. The second belt extends from Shui-k'ou to the mouth of the Sha River; and the third belt from there to the border of Fukien. The Banyan trees which give to Foochow the name of Banian City are frequent along the river to Shui-k'ou, but less so in the second belt. The last Banyan stands a little below the mouth of the Sha. From there on camphor trees take the place of the Banyan. Just back of Yenping stretches a high range which is a striking feature of the landscape as one comes up the river. The west branch of the river winds around the southern end of this range, passing through a narrow canon in which it "runs on edge" for a short distance, and at the narrowest point is hardly thirty paces wide. This is named the "City Gate Throat"; and in very high floods the rough ledges on either side cause such violent swirls as to make the Throat impassable. It is said that at the time of the Taiping invasion of Fukien a mandarin fleeing down the river was wrecked in the *Throat* and all on the boat perished except a babe. At that time also rich families escaping by boat were robbed at this point by local brigands.

About twenty years ago the manufacture of camphor gum was begun in this third belt. One of the first men to engage in it had cleared a thousand taels when the mandarin forbade the making of camphor without a license, and fined this man a thousand taels. Many trees are spared because of being not rich enough in the gum.

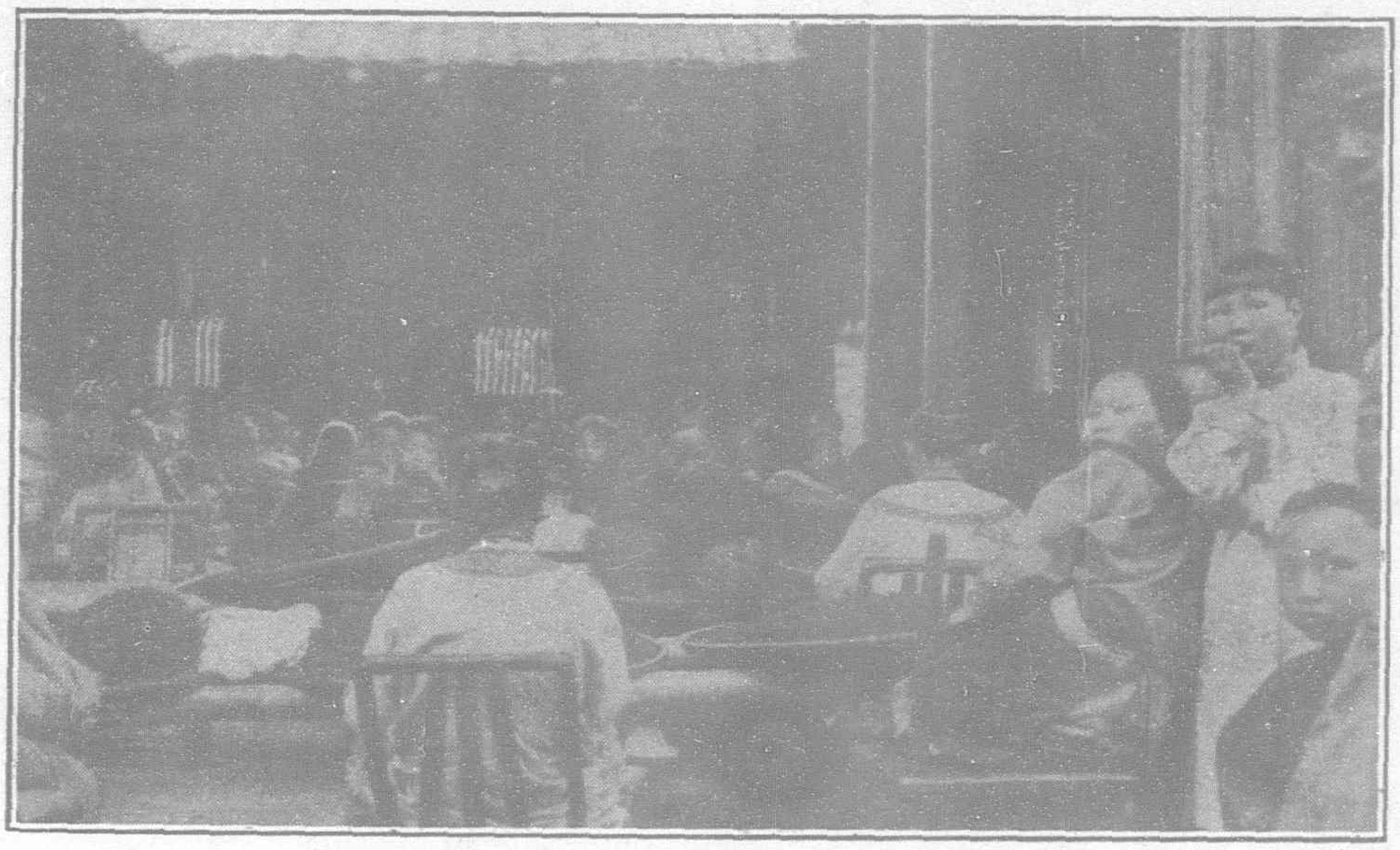
At Yenping city the official road leaves the river and crosses the mountain through a high gap called the San-ts'ien Pah-peh K'eng, "Three thousand Eight hundred Gorge," from the 3,800 stone steps which one must mount to reach the top of the gap. We have verified this number by actual count; and nearly 3,000 steps are one continuous winding flight. This is on the Yenping side. On the other side spurs give a gradual descent; and on these the growth of timber is the regular business of many villages. Some of these have the custom that when a boy is born, a hill will be planted thickly in rows with deal trees; yearly thinning out of the rows soon supports the child; and when the time comes for him to take a wife, sale of the timber furnishes the needed funds.



Loading Tea for Steamer at Pagoda Anchorage

The growth of timber has greatly increased during the last twenty years; and many old tea hills are now crowned with fine growths of young timber. There is now a very large export of the smaller poles from Foochow, and fresh supplies are continually growing in the interior; but it requires considerable capital to grow large timber. In villages where timber growing is handed down from father to son, sons can reap from their father's planting, and plant for their sons to reap; but in new villages quicker returns are often necessary.

From Shui-k'ou upward the official road has many liquid amber trees (gum trees) lining it at intervals; and there is a story connected with these. Back in the latter part of the eighteenth century a woman came to Foochow as the daughter of a provincial treasurer, then again as wife, and still again as mother, of men holding this office. Coming across this province in midsummer she was moved with pity for travelers exposed to the heat, and had these trees planted along the road side. It is farther related that, when a girl, she wrapped a bed bug in a piece of paper and hid it in a hollow of a tree, and in her old age she found it there still alive; but it bit her, and the infection caused her death. Scientific experiment has proven that this insect can starve a year, and yet be ready for business when released.


Culling Stems from Tea Leaves

Snow and frost are quite rare at Foochow, but may be expected every year throughout the Shaowu belt. The isothermal line of summer heat in the Far East lies along the Yangtze Valley; and in Fukien its southern limit passes south of Foochow and north of Amoy. At Foochow the sea breeze mitigates the heat; but throughout the central and western parts of the Min Valley it is intense. The southern part of the province has cooler summers than does the northern, as well as warmer winters.

Tea Leaves just plucked Wilting in the Sun

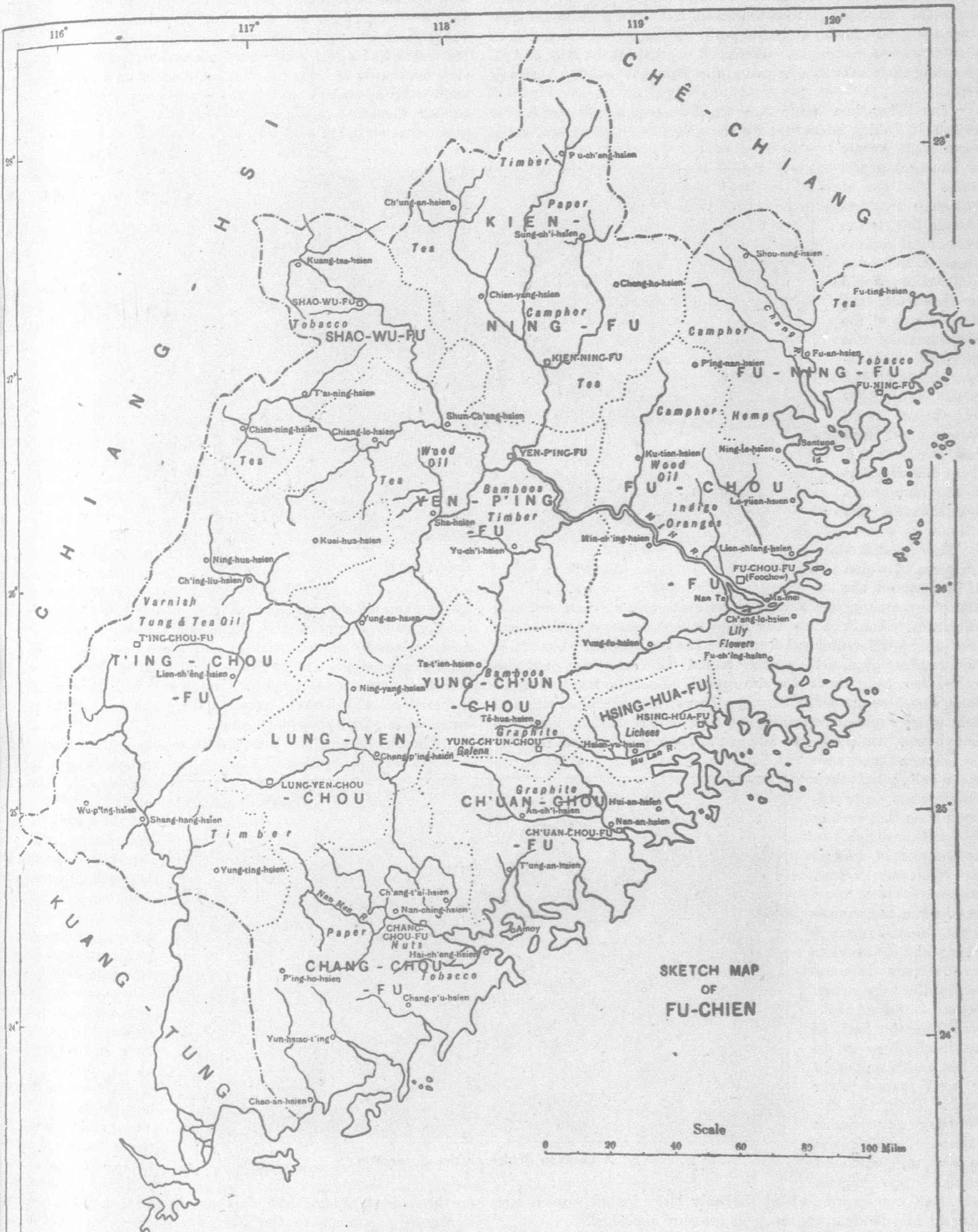
Literary graduates go from Foochow to various parts of China to hold office; but the people show no inclination to emigrate; in which respect they differ very much from those in the Amoy region. These latter style themselves Hok-lo (Hock-law), the *hok* being their way of pronouncing the Fu in Fukien, and the *lo* a suffix with somewhat the force of sir. In that region the drowning of new born girls was justified on the ground that many of the men went abroad and did not return to take Chinese wives. It was through these emigrants that Fukien first became known abroad; and they were taken as representatives of the whole province. Thousands who went abroad as coolies never were heard of again; and the report became quite prevalent that they were butchered, and their brains used in the manufacture of opium; and foreign opium was supposed to owe its superior quality to this admixture of brains. But this slander did not long survive.

In Foochow the "White" pagoda and the "Black Rock" pagoda in the southern part of the city are striking features. The former, on the east, is of brick and plastered with lime, the latter, on the west is of hewn stone. The White pagoda is well nigh 1,000 years old.

The streets of Foochow and foreign and official residences and the stores are lighted by electricity. The mountain streams near by will sometime furnish power for this and much more, though the time for this has not yet quite arrived. The long bridge with its huge granite stringers resting on granite piers is an object of much interest to visitors; but the piers dam up the water too much. It must soon give place to a steel suspension bridge.

To many foreigners in China, a sampan is a sampan, and that's all. But a Foochow sampan is quite unlike a Shanghai sampan. It is larger, is a family boat; and is scrupulously neat. The sampan boat people are a distinct class, though the head dress of the women resembles that of the country women. A very large boat employed in freighting up the Min is a "Butterfly Boat" from its broad spread. These boats have crews of ten odd men, and travel three together so as to double teams on the rapids. They are very slow. The "Duck Boat," so called from its resemblance to a duck floating on water, has eight men, and is faster than the butterfly. But both are largely supplanted by "Sparrow Boats," which are a recent innovation. Their hulls are round bottomed; they have crews of two or three, and carry only a few tons. They go in flocks, dodge around through side channels, and are quite spry. On the Upper Min we have also "Rooster Boats" which are made of long slabs of camphor wood skilfully spliced together. They are deeper and narrower than duck boats, and bow and stern curve up somewhat like a gondola. The crews are Kiangsi men from over the Fukien border, they travel in gangs, have crews of four men, and are about as fast as duck boats.

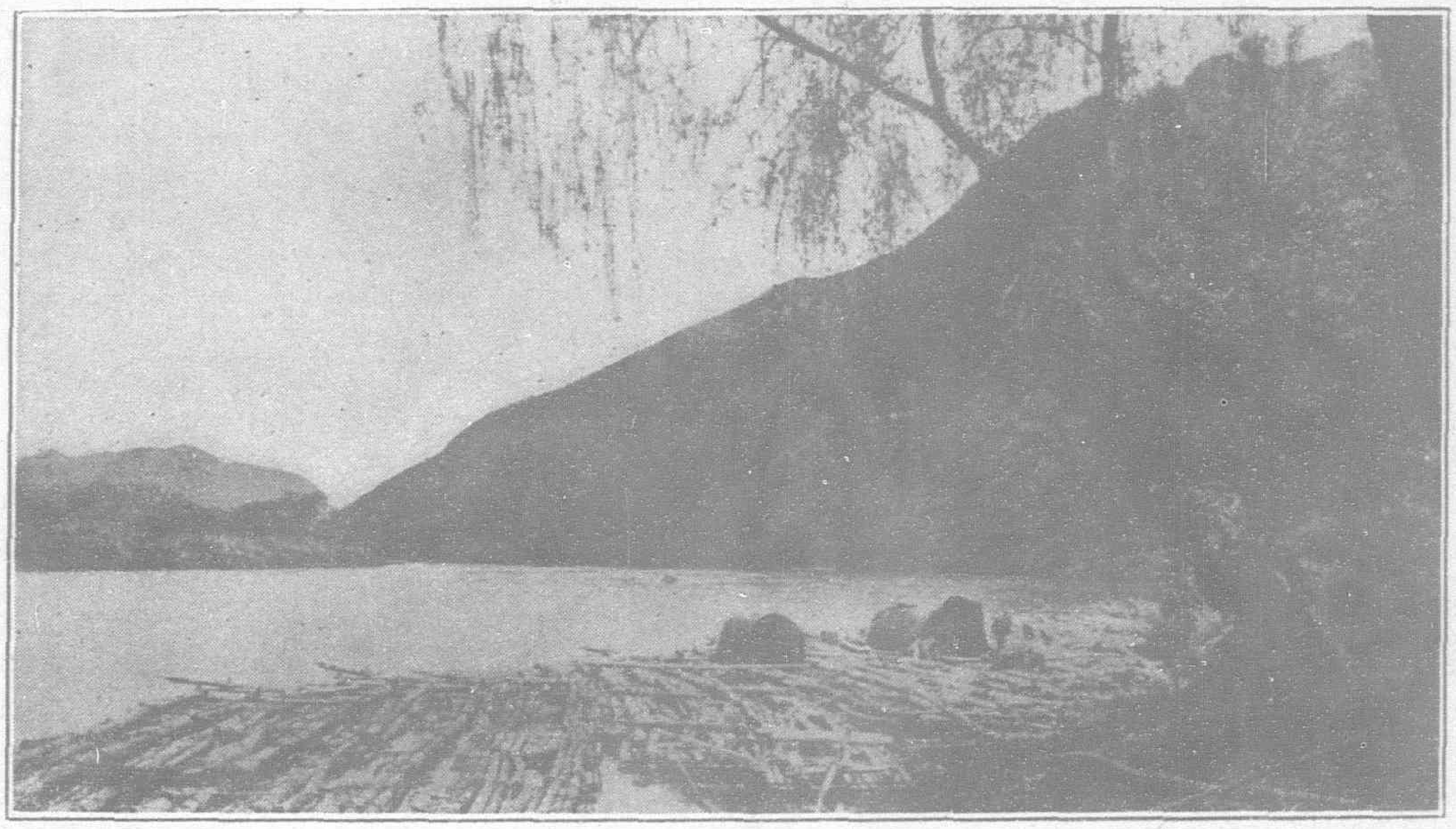
A junk is a junk, but they show much variety in size and even in shape. The timber junks are especially interesting. The bulk of the timber which they carry is bound up into huge bundles on either side of the junk by means of bamboo cables of great strength



SKETCH MAP OF FU-CHIEN

made of coarse strips of spilt bamboo braided together by skilled workman. Each junk is towed down the river by a flock of sampans. They are good sailers; and it is quite interesting to watch a fleet of twenty or so making its exit from the mouth of the Min, and all spreading their sails to a fair wind for Shanghai or other northern ports.

The T'ing-chou prefecture which occupies the south-west section of Fukien is drained by the river which flows across the north-east corner of Kuangtung and enters the sea at Swatow. In descending this stream by boat one can experience the same thrills as he would in descending the Min. Many of the inhabitants of this prefecture are Hakkas, i.e., K'oh-kia, guest folks, immigrants; and hence one finds there two very different dialects, that of the immigrants and that of the natives.



Timber Rafts on the Upper Min

Men in different parts of China all dress about the same; but among the women there are many and marked local differences. At Foochow the large footed country field women have a very different head dress from the small footed women. If the daughter of a field woman bound her feet, she would also change her head dress to correspond. Back in the mountains about Foochow are a few Sie-p'o villages; and the head dress of their women resembles somewhat that of the field women and boatwomen. On the Upper Min in the Yenping prefecture the Sie-p'o women are seen occasionally; but their head dress is quite different from that seen in the Foochow region. In the interior of Fukien the Shaowu women have one style of head dress, while the women of the Shunch'ang and Tsiang-loh districts have a very different one, coiffure in which the hair is trained backward from the back of the head five or six inches, and is supported by a V-shaped silver frame. These two districts have quite similar dialects. T'ingchou Hakkas are scattered through this region, and their women were about the only large footed women met with till foot-binding was in good measure abolished.

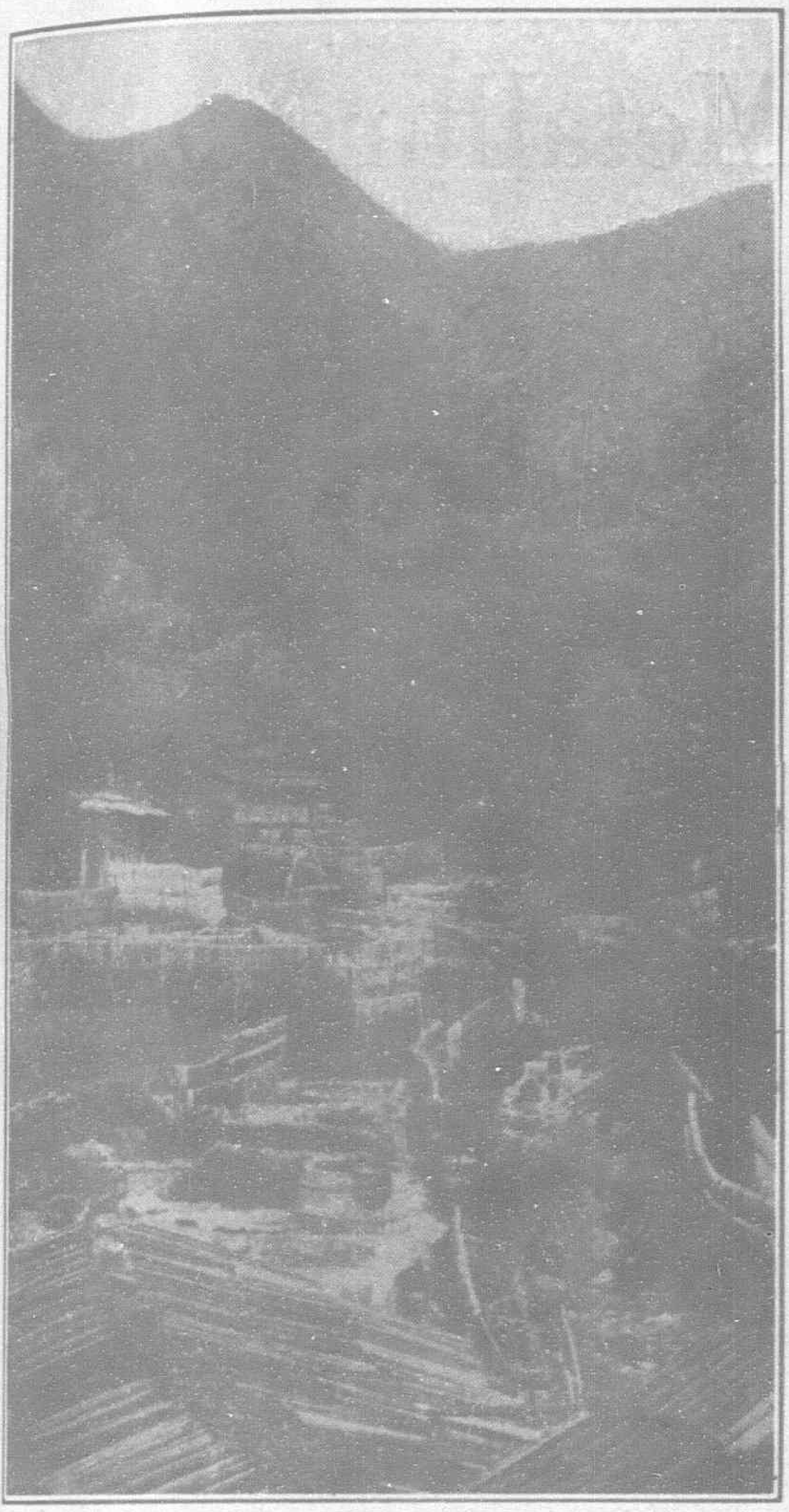
A Pontoon Bridge on the Upper Min

In the Shaowu region gold in small quatities is found in the mountain streams, and there are quartz ledges which would probaby pay for working. Iron and smokeless coal are also found. Limestone is common.

The history of tea in this province would of itself make a long article. The high price paid for it at the beginning, and the vast areas of virgin soil suited for its culture in the numberless valleys and hills of Fukien produced a state of things during each tea season like a gold mine rush. At various centres in the interior each tea season brought together numbers of men without families, while the resident families sought to earn enough in a few months to support them in easy idleness the rest of the year. In the earlier years Shaowu tea ranked very high; but later on it was so counterfeited, adulterated, etc., as to seriously lower its standing. Also old tea hills deteriorated in the quality of tea produced.

So far in this province the results of the revolution have been disappointing to the people. The establishment of the republic became quickly known even to the smallest mountain hamlet for the reason that every patch of rice is recorded and taxed; and since the change all tax collecting is done in the name of the republic. Every farmer has bamboo baskets holding each about 100-lbs., in which he carries produce from field to house and to market; and these have written of them in fine large characters by some good scholar the owner's name and the year of the emperor's reign in which they were made. But now all new baskets have on them the year of the people's kingdom in which they were made.

The thought of self-government begets in the minds of the people a new spirit of self-respect. The very chair coolies have caught something of it, and they have been especially benefitted by the prohibition of opium smoking. The first magistrate sent to Shaowu under the republic was a genuine reformer and initiated many improvements; but some of his successors have seemed to have had all the faults of the past with little of its responsibility to any higher authority. The bandits are much worse south and east of the central Min river and its western and northern head waters than they are in the rest of the province. Foochow is subject to the Northern government; but in the interior the Min river often marks the dividing line. The Shaowu region is divided between the two; but the North controls the larger part of the province. But whatever may befall Fukien in the future it cannot go back. The people have learned that there are better ways, and are reaching out after these;



A Paper Factory of an Rh-shih. Boiling Vat in Foreground

and their present humiliation acts as a stimulus, spurring them on.

The raising of opium was quite common in the south-east parts of this province; and the prohibition of it met with much opposition. In the Hing-hua prefecture there was even a local rebellion. But the abolition of its cultivation prevailed after a time. Recently, however, there is found here and there an official who even compels the farmers to plant the poppy. They are forced to buy the seed, and then after a time to make advanced payment on the assumed profit that will accrue from its sale. This is not confined to the officials on either side; and the excuse given for it is need of money for soldiers' wages.

Mining Concessions in Borneo

FOR a long time past concessions have been granted in Borneo to private enterprise, as for instance, the Julia Hermina concession in 1855, which, however was withdrawn because it was not worked. The government itself exploited the Oranje Nassau collieries near Pengaron from 1848 to 1885, during which period the total yield amounted to 210,000 tons of coal. Later this concession was passed on to a private concern, but withdrawn again in 1892.

The large pecuniary losses sustained in working the several ore-fields, which are situated principally in the western part of the island, are still remembered, and it is not likely that Dutch capital will be attracted thither a second time.

Some day perhaps in the heart of this district a dredger may be found that never reached its destination, while the mention of such names as Sepingen, Benkajan, Alluvia, Bukit and Pondok, etc., is quite enough to call to mind again that period of suffering.

On the other hand, the formation of the country in the south-east is favorable to the development of petroleum, which has since the latter half of the last century grown into a prominent industry, the output during 1918 and 1919 amounting to more than a quarter of a million tons of crude oil.

Brown coal has also been found both in the south and east, and though widely spread, it is as a rule too fine and hardly worth the trouble of getting. However, because of the high prices ruling just now, many beds are being worked at a profit, even in the more distant regions; but when normal times return many of these will be abandoned.

In view of the nature and properties of this coal, transport to Europe will not be worth while, as similar fuel can be obtained in sufficient quantities on the European market. The several mines working during 1917, 1918 and 1919 have yielded, respectively, 311, 791, 275, 946 and 331, 477 tons.

Gold and diamonds, which have always stirred the human imagination, and have given Borneo the reputation of a country of exceptional mineral wealth, have as yet been found but intermittently, so that up till now, from a European point of view, but few localities are worthy of consideration.

Frequent requests for diamond concessions have been made and granted. The best known is the Gg. Lawak diamond concession, granted in 1881, which was exploited with capital from the Paris firm of Rothschild. After some years of fruitless work, the industry was abandoned.

In Borneo, as we stated, diamonds occur but intermittently, so that the production varies considerably. In 1917, 1918 and 1919 the production amounted to 590, 1,752 and 966 carats, respectively, with a corresponding value of f.51,300, f.116,360, and f.129,600.

As to gold, the same may be said as with regard to the intermittent appearance of diamonds. After the failures experienced at the beginning of the present century, European capital withdrew from this industry and left it to the native population. For years a company was kept going, but after 1917 it went into liquidation. Nowadays Borneo gold is obtained from native diggings; and in 1919 gold only amounting to 756 grammes was obtained in the west and 5, 940 grammes in the southeast.

With regard to the small antimony mines that are being worked in British territory, and not on our side of the frontier, one must remember that there is good reason for exploiting antimony in the northern part of Borneo only. The name (Batu Sarawak—antimony polish) alone indicates that antimony may be found there in considerable quantities.

Notwithstanding, several spots containing antimony were also discovered in the Dutch part of Borneo. Nine of these were situated close to the Sarawak frontier, but on closer investigation only one was found to contain a small vein of antimony.

Iron ore is to be found in large quantities in many parts of Borneo, where it is being prospected for by private enterprise as also by the government.

The queer chemical composition of most of the Indian ores, to which the greater part of the Borneo ores also belong, demands a special method of manufacturing on a large scale. These difficulties have already been partly overcome, but the most economical way of working and manufacturing them is still to be found.

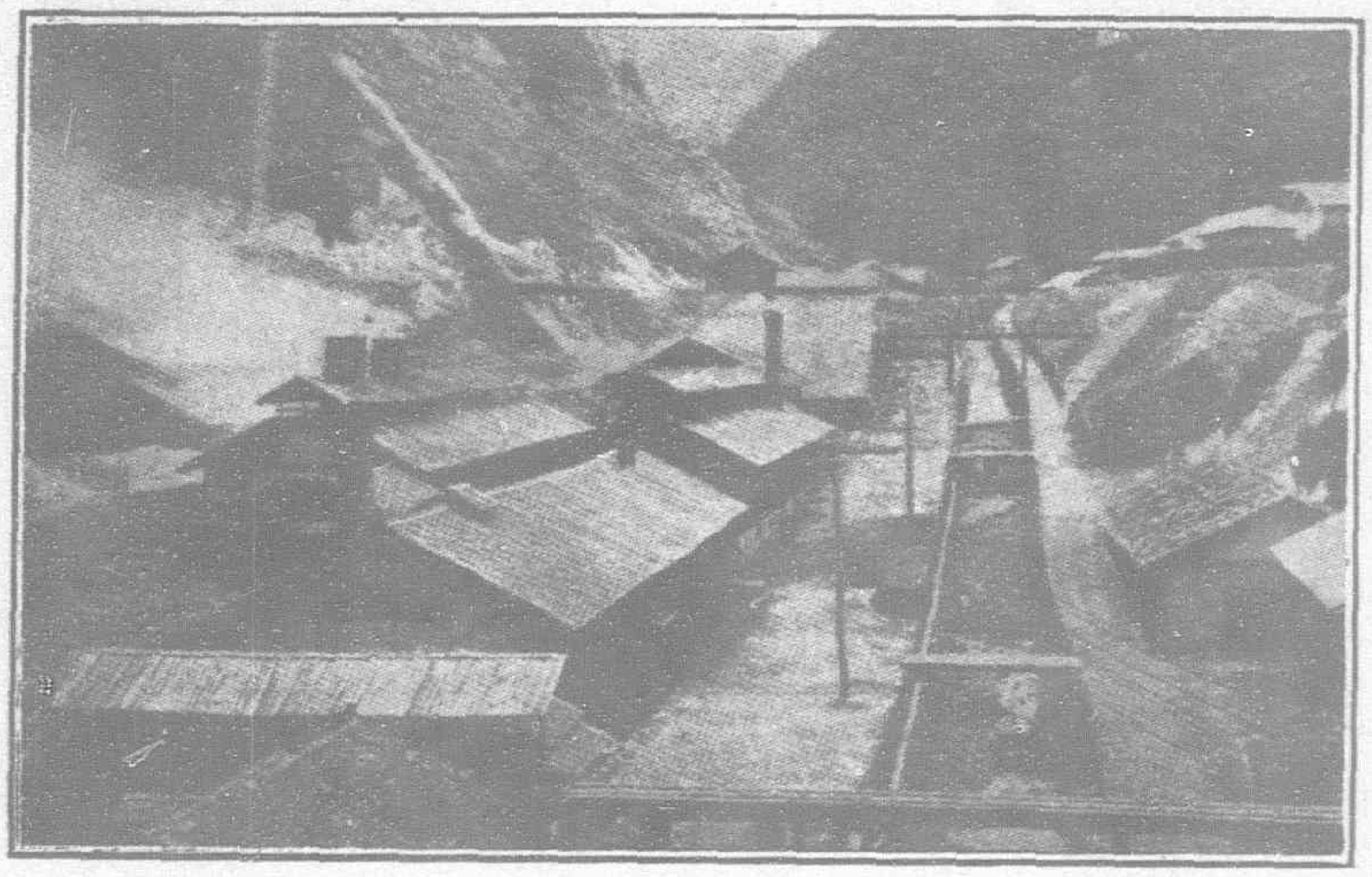
Finally, we would mention that copper, lead, zinc manganate, mercury, molubdine ores and platinum are also to be found in Borneo, but closer investigation shows that they only exist in small quantities.—From *The Dutch East Indian Archipelago.*

Prospective Business with Japan

A Japanese engineer who was in the United States in January to negotiate for equipment is authority for the statement that practically the entire Japanese railroad system of 8,000 miles is to be rebuilt, at a cost of about $200,000,000. The railways are to be made standard guage. In addition Japan is purchasing a large quantity of electrical equipment.

The article entitled "Hokkaido, The Northland of Japan" which appeared in our April issue is a reprint taken from the *Geographical Magazine*, acknowledgement of which we inadvertently failed to make at the time.

The Ore Mining and Metallurgical Industry of Japan



The Omori Copper Mine, Province of Iwami, the Fugita Co., Osaka

A GERMAN engineer, Mr. A. W. Paul, in summarising the metal development in Japan during and since the war writes in the *Compressed Air* Magazine that when at the beginning of the war the prices for metals declined affecting adversely the respective industries, gold mining experienced an enhanced activity and the output of this precious metal was raised from 11,500 pounds in 1913 to 17,000 pounds in 1915. However, when in 1915 the high business prospects in the metal market set in with enormously accruing profits, the gold output became slacker and it was not till 1919 that an increased activity showed itself, for which the Hokkaido washing plant has been mainly responsible. Not more than two per cent. of the gold output of the world is furnished by Japan.

Also, in silver, Japan furnishes not more than perhaps two per cent. of the world output. Since the price of silver went up by leaps and bounds during the war, silver production proved to be a most profitable business. The principal gold and silver yielding mines with their output for the year 1917 are given hereunder in kilogrammes:

	Silver	*Gold*
Kuhara Mining Co.	60,000	2,302
Mitsubishi & Co.	48,000	475
Furukawa & Co.	31,000	195
Fujita Mining Co.	25,500	742
Mitsui Mining Co.	7,500	862

Platinum is extracted in small quantities and principally at Hokkaido, likewise the metal osmiridium. Of the latter, the yearly output amounts to about 20 to 40 pounds. The price of plating in 1914 being about four yen per gramme, it reached in 1919 the enormous figure of 13 yen. The imports of platinum in the shape of bars, plates and wires was: 1913, about 390 pounds; 1914, 145 pounds; 1915, 125 pounds; 1916, 280 pounds; 1918, 20 pounds.

Japan's most important ore is no doubt copper. The tonnage production of this metal being in:

1910...	49,000
1911...	53,000
1912...	62,000
1913...	67,000
1914...	70,000
1915...	75,000
1916...	100,000
1917...	108,000
1918...	92,000
1919...	80,000

The principal copper firms are Furukawa & Co., Kuhara Mining Co., Fujita Mining Co., K. Sumitomo Mines, Mitsubishi & Co. and Tanaka Mining Co. The profits these firms made during the war were said to have been enormous.

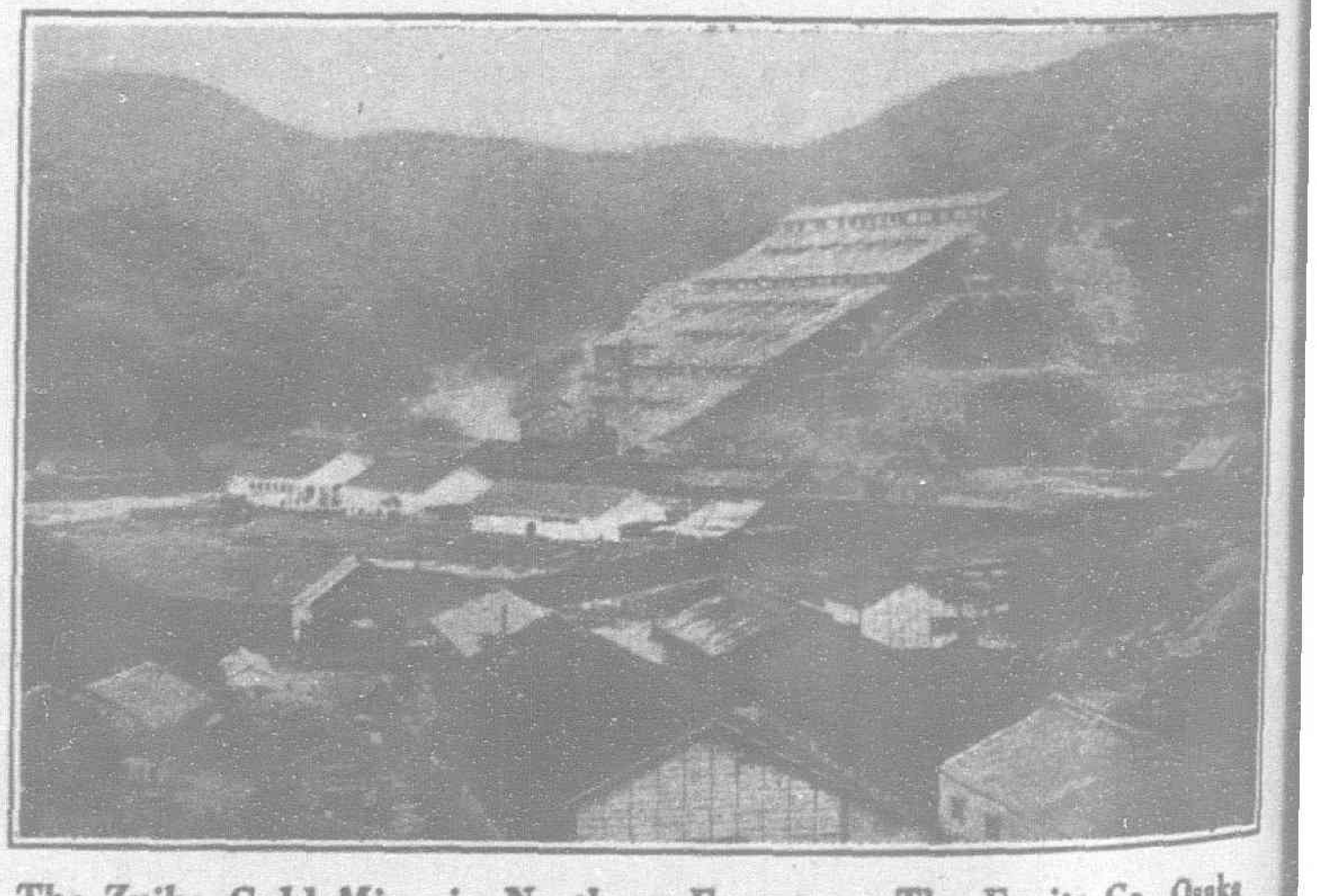
The Japanese exports of copper during the war were as follows:

	1914	1915	1916	1917	1918
Countries	*Tons*	*Tons*	*Tons*	*Tons*	*Tons*
China	14,129	1,454	1,514	5,009	7,540
Asiatic Russia	—	30,363	33,809	10,940	141
British India	2,489	1,240	87	4,055	2,475
England	6,922	12,445	14,581	24,933	5,497
France	3,543	4,021	4,242	18,266	8,647
U. S. A.	4,138	7,958	2,967	2,659	38
Germany	2,100	—	—	—	—

The reason for the greatly reduced export figure for the year 1918 and which was still enhanced for 1919 is chiefly due to the fact that owing to the cessation of hostilities the various countries having piled up large stocks of this useful metal were trying to get rid of them. The mines in Japan were forced therefore to greatly reduce their production.

The zinc industry experienced a tremendous boom during the war, the production in 1918 being about ten times that of 1914. Before the war Japan exported about 30,000 tons a year. There were two big smelteries at the time, viz., the Ohmuta Smeltery of the Mitsui Mining Company, and a smeltery of the Osaka Company in Settsee. Before the war most of the exports were shipped to Hamburg and Antwerp. In 1916, the production of zinc amounted to 53,000 tons and in 1917 to about 80,000 tons.

The output of lead is unimportant and does in no way satisfy the home demands. Before the war it was about 4,000 tons a year and 80 per cent. of this was worked by the Kamioka Zinc Lead



The Zuibo Gold Mine in Northern Formosa. The Fugita Co., Osaka

Ore Mine of the Mitsui Mining Company. The exports and imports during the war period in tons were as follows:

	Lead Production	*Lead Imports*
1914...	4,600	16,139
1915...	4,800	15,820
1916...	11,490	22,361
1917...	15,800	16,500
1918...	10,700	36,300

The principal providers of lead ore were China, the United States and Siberia; and of lead metal Australia and the United States.

Tin production is quite unimportant; Japan gets her chief supplies from the Straits Settlement.

Nickel is not produced at all in Japan, and the total of the country's requirements has to be imported. Whilst before the war England was the principal source of supply, and to a small extent also Germany, the United States has become now one of the chief sellers. French engineers are in Japan with a view to installing a large plant for the working of nickel.

Aluminium has not been produced yet in Japan, although the important aluminium ores, bauxite and kryolite, are to be found in the country. Up to the war the demand for aluminium was very small, the imports having been about 500 tons a year from Europe and the United States, but during the war, and especially in the last two years, imports were greatly increased.

The production of antimony regulus in Japan rose from thirteen tons in 1913 to more than 10,000 tons in 1916, but the raw ore was chiefly imported from China and worked in Japan. The metal was principally used for the production of amunition; hence the greatly increased demand.

Chinese Subsidiary Currency

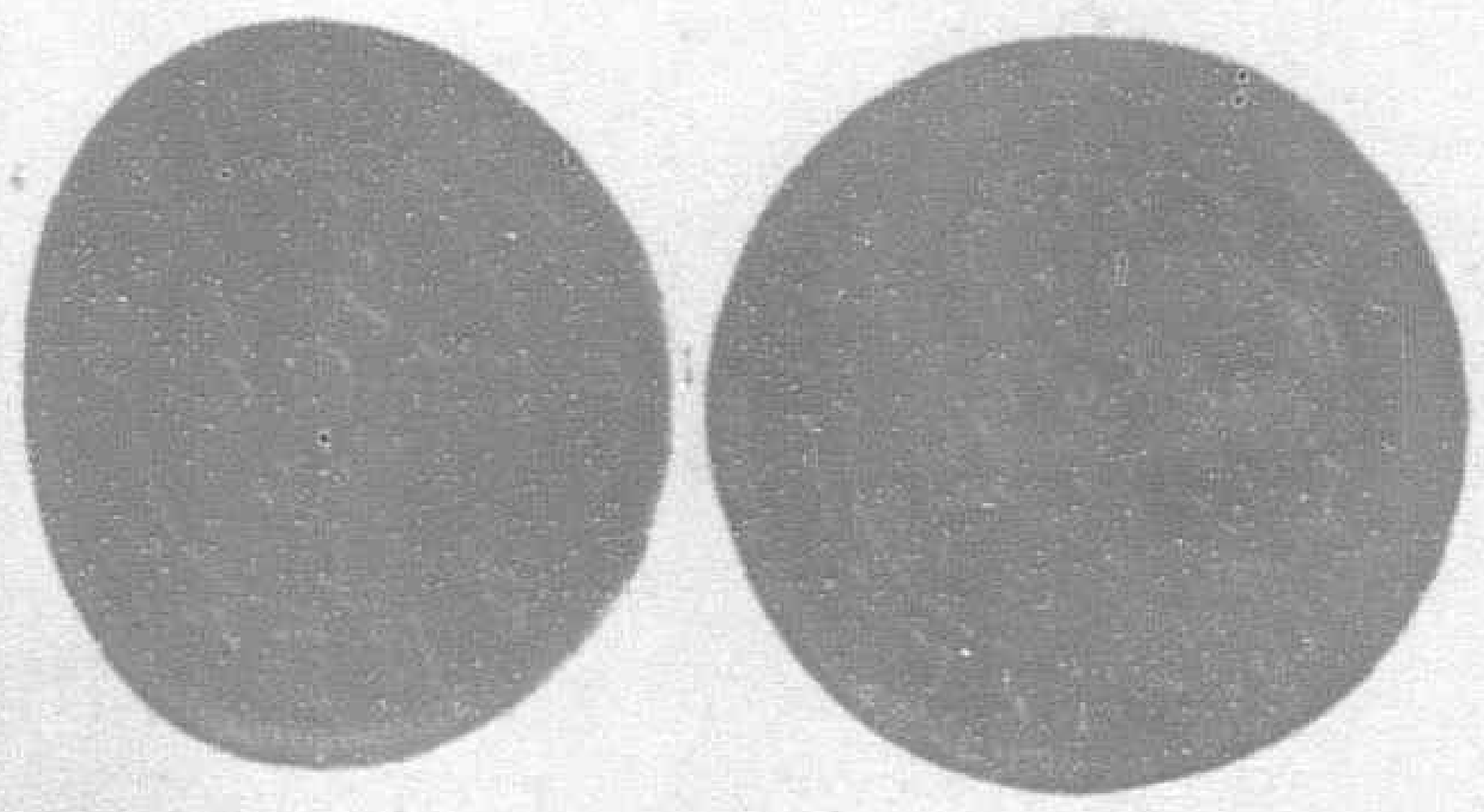
Shrinkage Hampers Forward Influences

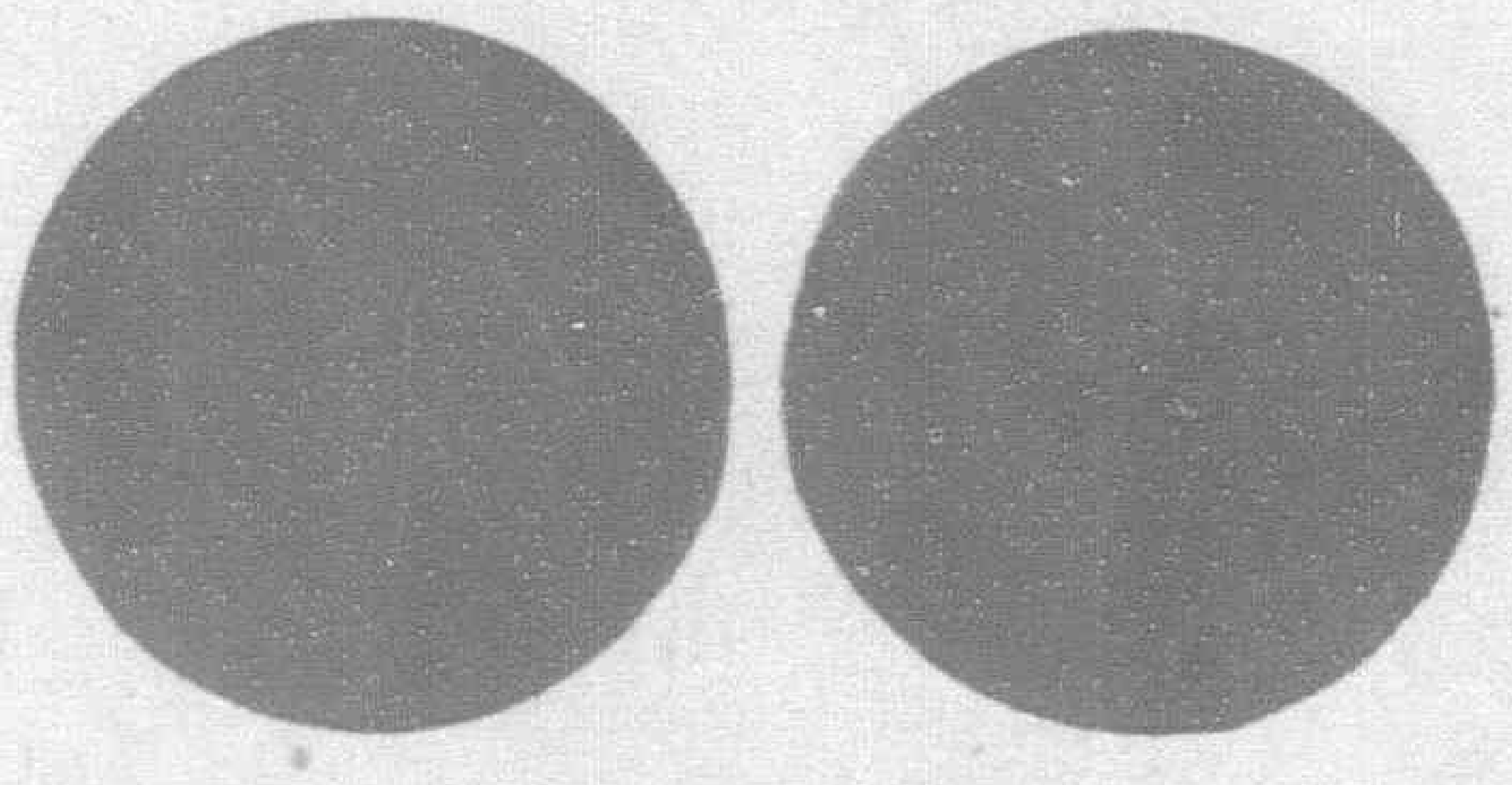
SMALL coin is the trade medium of the masses. Its value, when fluctuant, affects the buying and selling of retail commodities to an extent that must later reflect on the imports and exports of any country. Hence it is that a study of the matter must be of especial interest to traders in the Orient. Their business must grow or decrease as a result of enhanced coin valuation or depreciation. A thesis on the subject which comes from the pen of Mr. Donald McColl, general manager of the Shanghai Electric Construction Company, Ltd., deals very clearly with this subject of subsidiary coins. It follows a study made about two years ago and the present investigation has been made because of the appearance in circulation of considerable quantities of new copper coins, with further depreciation. Mr. McColl, in dealing with one-cent coins, writes: Since the early part of 1919 when the new coins began to appear in Shanghai, daily records have been kept by the Shanghai Tramways (Foreign Settlement) of the proportion of such new coins in the revenue. The following table is based on these records:—

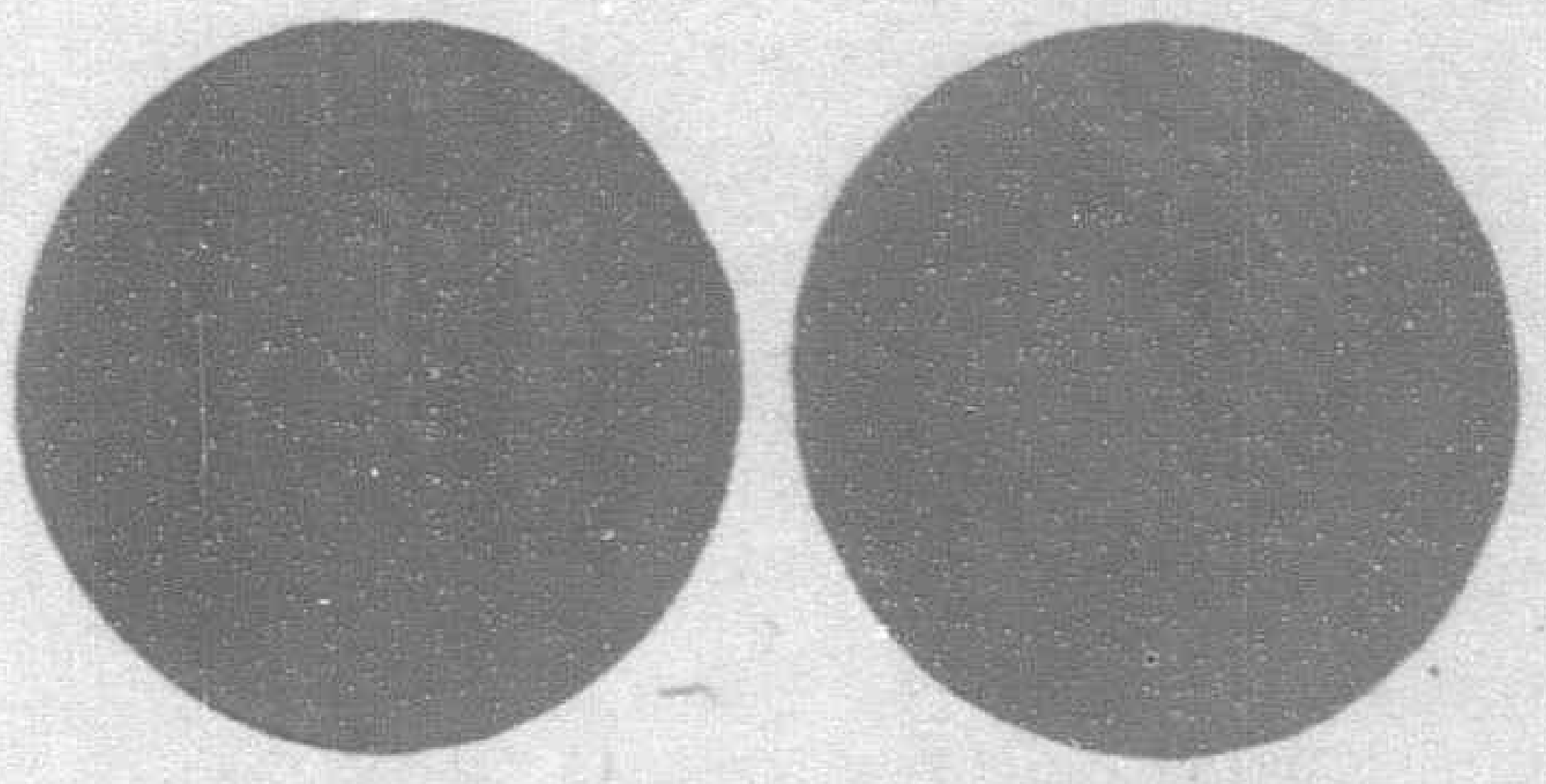
PERCENTAGE OF NEW COINS (MOSTLY LIGHT-WEIGHT) IN SHANGHAI TRAMWAY RECEIPTS

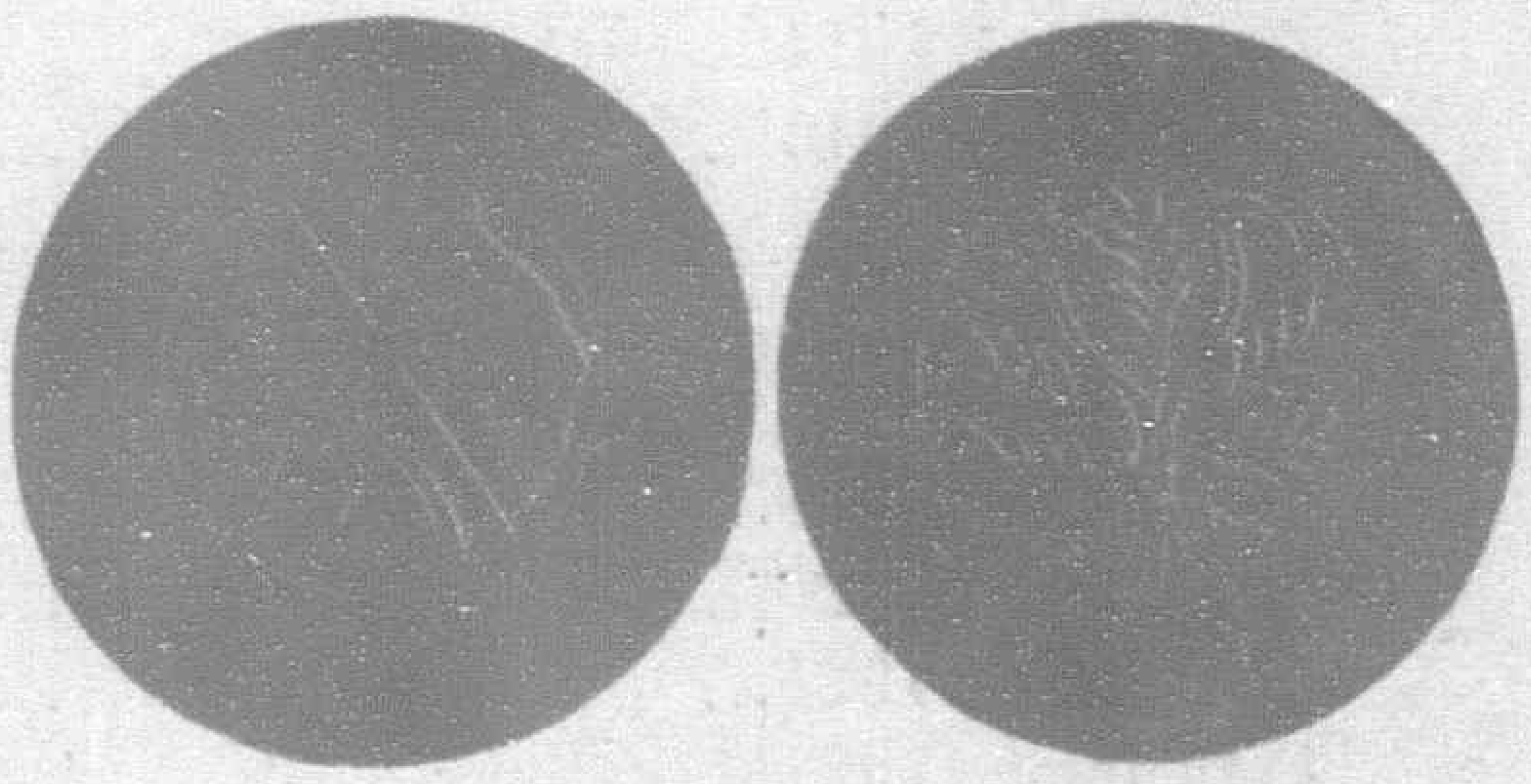
	1919	1920	1921
January	—	5.24%	10.04%
February	2.70%	6.14%	11.84%
March	3.44%	6.98%	
April	3.28%	6.89%	
May	3.32%	7.64%	
June	3.63%	7.35%	
July	4.07%	7.68%	
August	4.83%	7.73%	
September	5.05%	7.68%	
October	5.12%	7.56%	
November	5.17%	7.50%	
December	5.18%	8.44%	

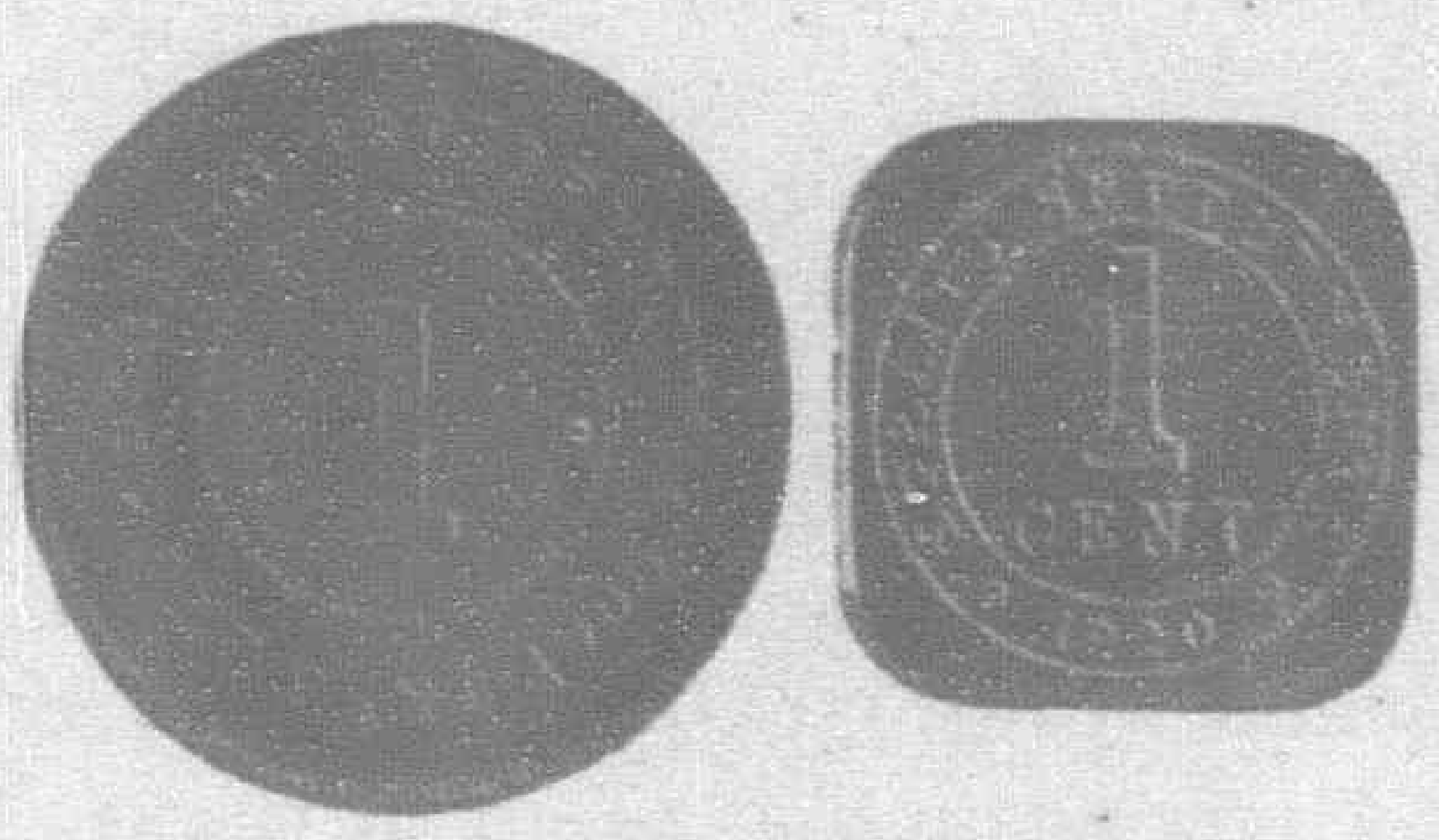
On March 12, 1921, the ratio was 13.06%.


Monarchy Coin
(best type)


First Issue Republic
(2nd best type)


Republican coins issued since 1918
(rubbish)


Hunan Coins. Hankow Mint
2-cent



Straits Settlement Coins
The round coin is sometimes collected by Shanghai Tramway conductors

About the beginning of February this year a consignment of 1,000,000 new one-cent copper coins was brought to Shanghai from the Nanking mint. The introduction of these coins into circulation has accelerated the increasing ratio of depreciation. The design of this million coins is new, without any foreign wording as on the older coins and with various minor changes. The new coins are even more poorly embossed than previous issues and are extremely crude and rough. They are about 10 per cent. lighter than the one-cent coins turned out in the earlier years of the republic. Small supplies of these new copper coins are being constantly smuggled into Shanghai. (Over 93,000 one-cent copper coins were recently seized by the Shanghai customs ex a Japanese steamer from Hankow).

As the copper coins in circulation at the end of 1918 are doubtless still in use, the figure of 13 per cent. (as above) may fairly be taken to represent the approximate *increase* in the 1-cent copper coins in circulation in Shanghai since the end of 1918. In certain parts of China, the additions to the coinage appear to have been greater because of the introduction of 2 cent coins as well as fresh issues of 1 cent coins. In an article in 1915, I estimated the number of 1 cent coins then in circulation in China at 22,000,000,000. From the foregoing data, it is evident that, since the beginning of 1919, the additional issues must have amounted to at least 14 per cent. of this figure, equal to 3,080,000,000 copper cents.

Two-cent Coins

In my 1915 article, I referred to the proposal to introduce 2-cent copper coins as "a dangerous and retrogade feature of the Currency Law." That these apprehensions were not unfounded is shown by the fact that, at Hankow, where two-cent coins are in circulation they are more heavily depreciated than one-cent coins, the rate being over 162 to the dollar as against 151 for one-cent coins.

The ratio of intrinsic value to face value of the two-cent coin is only 48.8 per cent. as against 58.3 per cent. for the one-cent coin. Two-cent coins have not appeared in circulation in Shanghai.

The Motive—Minting Profits

The resumption of minting activity coincided with the fall in the silver price of copper ingots following the close of the war. The present position is as follows :—

	1-cent coin	2-cent coin
Weight (candareens)	17.72	29.20
Intrinsic (or metal) value computed on		
Copper (93 per cent.) per ton ...	$700.56	$700.56
Zinc (7 per cent.) per ton	279.89	279.89
Minting labor, etc., per 10,000 coins	9.50	17.00
7 per cent. interest on Capital Investment=per day	160.00	160.00
Face value	1.000	2.000
Depreciation	0.301	0.767
Circulating rate	0.699	1.233
Intrinsic (or metal) value	0.583	0.976
Minting profit	0.116	0.257
Ratio of intrinsic (or metal) value to face value	58.3%	48.8%
Circulating rate (cents per $) ...	143†	162*

† Average of different cities.

* At Hankow.

The minting profit on 3,080,000,000 copper cents at the rate for 1 cent coins as above would be over $3,500,000. This profit is very large on the small working capital involved, due partly to the capital being turned over again and again in the course of the year.

The lower ratio of intrinsic value of the two-cent coin is a special danger: it makes overminting for profit still more attractive and gives even greater encouragement to counterfeiting than the one-cent coin. For the sake of minting profits, the Chinese mints have been aggravating the bad state of the currency whenever opportunity offered by—

(*a*) Excessive issues of coins.
(*b*) Reducing their metal value.
(*c*) Introducing low-value two-cent coins.

At the present production costs (in silver) the 1-cent coins would have to depreciate to 171.5 cent to the dollar and the 2-cent coins to 204.99 cents to the dollar before minting profits would disappear. Thus :—

	1-cent coin	2-cent coin
Face Value	1.000	2.000
*Depreciation	0.417	1.024
Circulating rate	0.583	0.976
Intrinsic (or metal) value	0.583	0.976
Minting Profit	Nil	Nil

* 1-cent 4.17 per cent. or 171.5 cents to dollar.
2-cent 51.2 per cent. or 204.99 cents to dollar.

With a 20 per cent. increase in the present silver price of copper ingots, the minting of 1-cent copper coins would cease to show a profit; with a 27 per cent. increase, the minting of 2-cent coins would cease to show a profit.

The Evil Effects

The immediate effect of the introduction of all this additional coinage, on the top of an already superabundant circulation, has been to increase the ratio of depreciation. The steady increase in the depreciation of copper coins in Shanghai during the past two years in shown by the following table :—

	1-cent coins (number per $)		
	1919	1920	1921
January...	132.12	136.27	141.35
February	134.67	135.06	143.50
March	135.43	137.18	
April	135.24	137.59	
May	135.31	138.08	
June	135.86	138.31	
July	135.95	139.34	
August	136.19	139.75	
September	136.43	139.65	
October	136.56	139.87	
November	136.51	140.42	
December	136.18	141.36	

On March 12, 1920, the rate was 145.37 cents to the dollar.

The losses of the Shanghai Tramways (Foreign Settlement) in converting its revenue in depreciated subsidiary coinage into dollars have been :—

(From 5th March)	1908...	$ 50,812=14.77%
Year	1909...	116,089=24.01%
,,	1910...	155,184=24.91%
,,	1911...	168,848=22.93%
,,	1912...	239,375=24.55%
,,	1913...	258,810=23.19%
,,	1914...	316,670=26.04%
,,	1915...	362,368=28.58%
,,	1916...	387,510=26.72%
,,	1917...	354,776=23.26%
,,	1918...	390,377=23.95%
,,	1919...	521,385=26.21%
,,	1920...	658,572=27.93%
January,	1921...	60,145=29.27%
February,	1921...	62,012=30.38%
	Total	$4,102,933

For week ended March 9th, 1921, the percentage of loss was 31.04 per cent.

The depreciation affects the whole of the country, some parts more severely even than Shanghai. The following are the average circulating rates in 12 cities, in December, 1918 and February, 1921.

		Dec., 1918.	Feb., 1921.	Increase.
Amoy		132.77	143.30	10.53
Changchow		133.31	143.30	9.99
Chefoo		134.70	145.70	11.00
Chinkiang		134.07	144.40	10.33
Foochow		131.90	143.60	11.70
Hangchow		132.00	143.00	11.00
Hankow	1 cent	138.47	151.50	13.03
	2 cents	148.10	161.20	13.10
Nanking		134.30	145.00	10.70
Ningpo		131.73	143.50	11.77
Shanghai		*132.57*	*143.70*	*11.13*
Soochow		132.65	143.00	10.35
Tientsin		137.82	148.40	10.58

It will be noted that Hankow (adjacent to an active mint and with 2-cent as well as 1-cent copper coins) has the heaviest depreciation of all and that the depreciation of the 2-cent coins is heavier than that of the 1 cent. The depreciation is now heavier in Shanghai and throughout the country than it has ever been.

An American political economist wrote, years ago, "wages rise much more slowly than goods and never proportionately because laborers do not well understand the situation and never act quickly enough to insure themselves; and so they are always great sufferers from a depreciated currency."

In China, vast numbers of the people are paid in copper coins and adjustments have not been made which compensate for the depreciation. The purchasing power of the people, therefore, has been reduced. The position is aggravated by higher prices for food and clothing. In a country like China, with the bulk of the population poor even at the best of times, a depreciated and further depreciating subsidiary currency, which is necessarily the main medium of exchange, must tend to intensify the struggle for existence. Reduction in intrinsic value and additional issues of coins are merely subtle methods of robbing the people. With actual famine and pestilence, the people can ill support the added burden of exploitation by the further watering of the currency. The depreciated coinage robs them every time they make a purchase.

An Oxford professor of political economy writing on depreciated currency, said: "As long as an inconvertible currency lasts, it never ceases to harass trade and every commercial dealing between man and man. The harm is renewed day after day, week after week, year after year, ... a bad, unsound, untrustworthy currency persecutes society at every turn and brings loss on all but gamblers." To quote further from the American economist already referred to, "All classes of the people are ultimately great losers in wealth and reputation from the destruction of the stable measure of value." China's depreciated currency restricts trade and tends to dry up the springs of activity. Currency shrinkage shrinks other things. A currency such as China now has not only hampers forward influences; it puts back the clock.

Schemes for the establishment of new undertakings in China have to contend with the difficulty of very high prices for imported equipment. When the revenue of the undertaking has to depend upon a depreciated subsidiary currency, liable to further serious shrinkage in value at the will of profit-seeking mint officials, the risks to capital are materially increased. These risks equally affect the development of existing undertakings whose revenue is in subsidiary coinage. Obstacles to the initiation of new enterprises in China must retard its opening up and be prejudicial to the interests of the people.

Reduction in the purchasing power of the people, through increasing depreciation of their coinage, must necessarily tend adversely to affect trade with China and, therefore, foreign undertakings which produce for Chinese markets.

From the point of view of the Chinese government, the policy of watering the currency is, of course, equally wrong. Initial profits on minting are soon far more than lost in the reaction upon the Government of the reduced paying power of the people consequent on the increasing depreciation of the coinage. The government of a country and its people rise or fall together. Their interests cannot be separated. If depreciation of the coinage reduces purchasing power, duties and taxes must suffer. China's currency policy has been the worst both for the government and the people: it is fraught with the gravest dangers, economic and other.

Non-Observance of China's Treaty Obligations Regarding Currency

In Article 2 of the British Commercial Treaty of 1902 with China (commonly called the Mackay Treaty), the Chinese government gave the following undertaking:—

> "China agrees to take the necessary steps to provide for a uniform national currency which shall be legal tender in payment of all duties, taxes and other obligations throughout the empire by British as well as Chinese subjects."

Certain Commercial Treaties of other countries with China contain clauses to the same effect. Not only, however, have no practical steps been taken to fulfil these obligations but much that has been done during the 19 years since the obligations were undertaken has only aggravated the condition of the currency. In 1902, there do not appear to have been any one-cent copper coins in circulation. In 1904 there were so few that they circulated at a premium, the rate being between 80 and 90 cents to the dollar. Early in 1914, the law for the national currency appeared. This was heralded as a guarantee of early and adequate reform of the whole currency. In my 1915 article, I referred to the fact that the new law, which provided for the minting of token coins (copper and nickel) made no provision for their acceptance at face value by government institutions. I drew special attention to the danger of the provisions in the law for 2-cent copper coins of low intrinsic value and 5-cent nickel coins of a still lower ratio of intrinsic value to face value.

The tendency is for people to prefer the coins of which they can obtain the greatest number to the dollar. In other words, the heavier the depreciation of a coin the more is it likely to be used for small payments. Owing to their much lower proportion of intrinsic to face value, the nickel coins provided in the law would tend to circulate at more cents to the dollar than the copper coins. Popular preference, therefore, aids the policy of exploitation by the mints.

In the explanatory notes accompanying the law it is stated, "we have now made the nominal value of the token coins 30 per cent. higher than the intrinsic value." This refers to subsidiary silver coins. There is no reference to a corresponding percentage for copper coins, but weights are specified for the latter, and, although the coins now being minted do not differ greatly from these weights, the nominal value of the 1-cent coins is 72 per cent. higher than the intrinsic value and the 2-cent coins 105 per cent. higher. I pointed out that wide differences between intrinsic and face value would make both official minting of coins and counterfeiting unduly attractive, and I tried to show that, in a country of the backward state of development and administration of China, anything approaching the considerable proportion of token margin found practicable in Western countries of complete and consolidated administration would be unsafe. The law provides for recalling the old coins and reminting them to the new standard, and the explanatory notes refer to their circulation at face value, without discount. In the notes it is also laid down. "The government will endeavor to ascertain the status of supply and demand for token coins and will mint just as much as it would require to meet the needs of the people." Although the intrinsic values of the coins in relation to face values as provided in the law are unduly low for conditions in China, if the other provisions for recalling and reminting the old coins and limiting the issue to "the needs of the people" had been observed, the serious aggravation of the condition of the currency which has taken place since the law was published would have been avoided. There is no evidence of any of the sound provisions of the law being carried out to mitigate the effects of the unsound provisions. New coins continue to be turned out as *additions* to the already excessive quantities in circulation; coinage is *not* withdrawn for reminting because there would be no profit to the mints in doing so; and the customs returns show imports of copper obviously intended for the mints. Moreover, the new coins are of such extremely poor manufacture that counterfeiting is easy and cheap.

No Protection of Token Coins

There must, of course, be some token margin as a protection against demonetization in the event of a considerable rise in the market price of the metal. To avoid encouragement of overminting and counterfeiting, the token margin should not, in China, be more than is necessary to safeguard against melting down. The basic essential of a token coinage is the government's absolute guarantee of the face value of the coins. The Chinese government has no regard for this. It issues token coins as if they were *ad-valorem* coins containing their own protection. The coins are turned out cheaply and roughly and sold to native banks as a commodity for profit; there is no pretence that they are to meet any currency need of the people; and they are issued without any protective measures or guarantee and left to find their circulating rates according to their metal values and to supply and demand. Every addition to the quantity reduces further the circulating value of the coins. When the falling circulating value approaches the bare intrinsic value, the ratio of profit would cease to be attractive to the mints, and nickel token coins (also provided for in the law) would probably then be exploited in a similar manner.

The Requirements

The provisions which ensure, in Western countries, the maintenance of token coins at face value are, of course, even more necessary in China. These are mainly :—

(1) That the coinage is issued by the government, and has the *support* of the government whose institutions always accept it at face value.

(2) That the quantities of coins issued are regulated according to actual requirements.

(3) A legal tender limit.

(4) That the coins are of such fine design that elaborate machinery and the most careful workmanship are required to turn them out. Counterfeiting is thus rendered difficult and expensive.

(5) Severe penalties for detected counterfeiting or the importation of counterfeit coins.

The backward state of China makes it impossible for the administration to protect so large a token margin as in advanced Western countries and the token margin should have a limit suitable to the conditions in China.

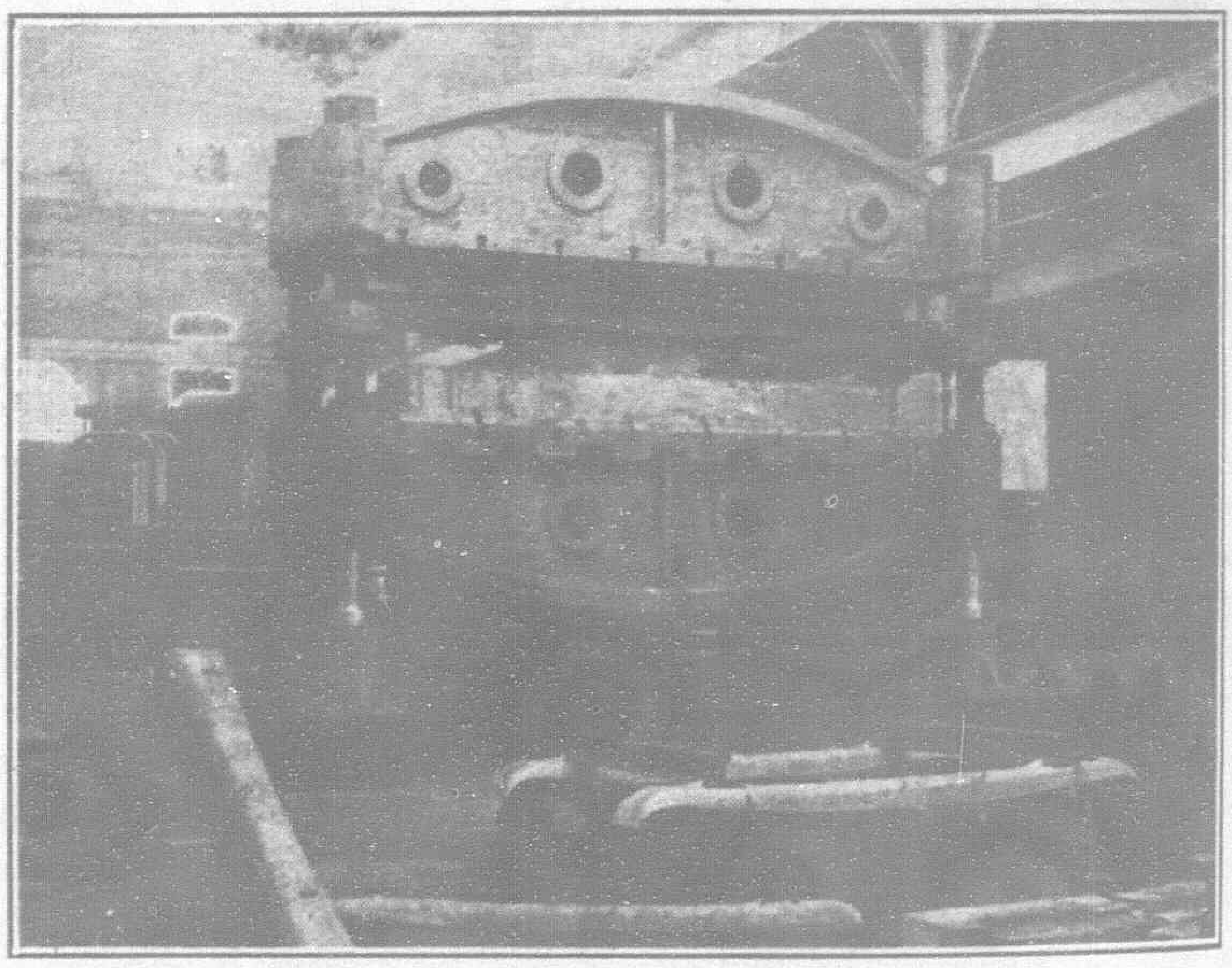
The currency policy in China to-day is more dangerous than it appears to have been for years, and, unless promptly remedied, can scarcely fail to have disastrous and far-reaching consequences. The immediate requirement is the absolute stoppage of minting of new coins. The urgency and importance of this cannot be overemphasized. To ensure stoppage of minting, probably the importation of copper discs would have to be prohibited and a suitable tax imposed on the importation of copper not in manufactured forms.

The scheme for the minting of Chinese silver dollars under foreign supervision to ensure the establishment of the dollar as a generally acceptable standard should be the first important step towards complete currency reform. The success of this scheme would depend mainly upon foreign supervision. If foreign experts could also be utilized to recommend revision of the defective currency law in the light of actual conditions and experience, and, under the provisions of the law so amended, to supervise reminting and the general reorganization of the currency, an incalculable boon would be conferred upon China. After close attention to this subject for over 12 years, I see no other way in which China's Treaty obligations of 1902, in the interests of the Chinese people and all who have dealings with China, are likely to be fulfilled. It would appear to be unwise and against the interests of China to lend money to its government unless definite arrangements are made for the reform of the whole currency under foreign supervision.

Currency reform is urgent as a safeguard to what exists, an insurance against complete break-down: it is also a pre-requisite to many other reforms and to the development of the country in the interests of China and the rest of the world.

In the Vanguard of Civilization

HISTORY is a record of past progress or deterioration. As humans observe it the world is progressing in spite of happenings in which the hand of deterioration is plainly evident. Wars destroy as do famines and disease but creation is the predominant instinct of man and in this direction he makes marked progress. Apart from the advances made in art, literature and the sciences it is said that progress is the distinctive note of mechanical science, there being no standing still in workshop development. If the history of the firm Henry Berry & Co., Ltd., hydraulic engineers and specialists of Leeds, can be taken as a criterion then there can be no question but that this statement is correct. Commencing some forty years ago as manufacturers of hydraulic machinery and special heavy machine tools they have developed their works first by manufacturing frame presses for pressing motor tractor and commercial vehicle frames, also riveting machines for riveting up the frames, and tyring presses for fixing solid tyres to wheel rims, until now they manufacture all important types of modern machinery. Unquestionably, a visit to the works by engineers and buyers in England on furlough will disclose such engineering progress as makes this firm so well known and reliable.



Sleeper Press

Petroleum in the Philippines

By W. D. SMITH of the Bureau of Science

HISTORY.—The first mention in geological literature, so far as we know, of gas or petroleum in the Philippines is found in the description of the Island of Panay by the Spanish geologist, Abella, in the year 1890. In 1898, an oil well was being dug on the estate of Smith Bell & Co., British concern, near the town of Toledo on the west coast of Cebu. In this year, an insurrection broke out against Spanish rule and the drillers were driven from the well, which has been abandoned ever since. It is now practically as the insurrectos left it; that is, choked with rubbish which would have to be cleared away before operations could be renewed.

About 1910, a number of Americans became interested in the petroleum deposits long known by the Filipinos to occur on the peninsula of Tayabas in the southeastern part of Luzon, which were apparently unknown to the Spaniards. Two wells, 117 and 300 feet (35 and 91 meters), respectively, were dug from which a few gallons of oil were pumped, but nothing of any great importance has been done since then, except to keep up assessment work on the properties. At the end of 1917, there was considerable excitement in the Islands over the discovery of oil in the Lanao region of Mindanao Island. The existence of petroleum on that island was known to geologists of the bureau of science as early as 1908, but they could not visit the localities owing to the state of the country.

In 1919, Act 2814 was passed by both branches of the Philippine legislature, and approved by the governor-general on March 4th, providing for the creation of the National Petroleum Company.

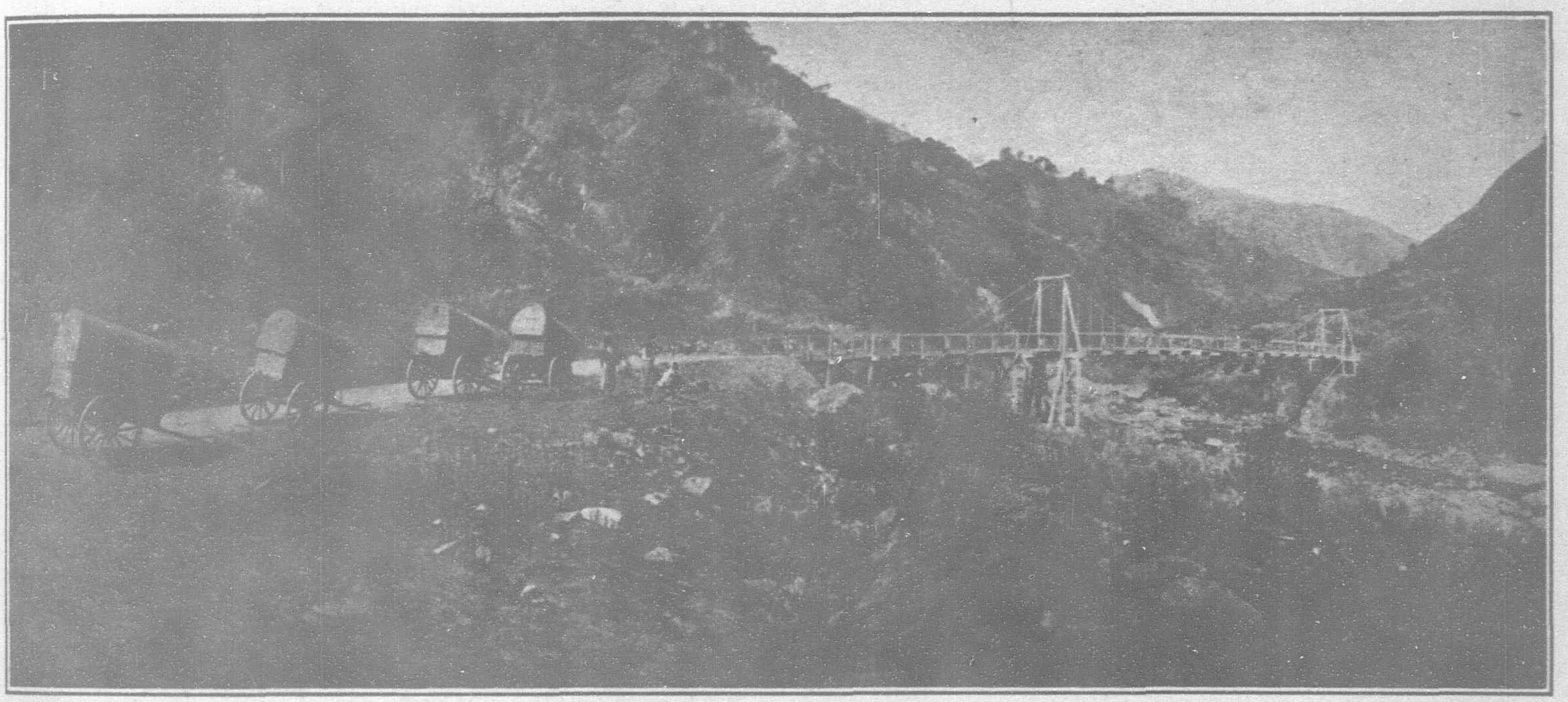
In August, 1920, the Philippine legislature passed the following act providing for the exploration, location, and lease of lands containing petroleum and other mineral oils and gas in the Philippine Islands:

AN ACT TO PROVIDE FOR THE EXPLORATION, LOCATION AND LEASE OF LANDS CONTAINING PETROLEUM AND OTHER MINERAL OILS AND GAS IN THE PHILIPPINE ISLANDS.

Be it enacted by the senate and house of representatives of the Philippines in legislature assembled and by the authority of the same:

Section 1. All public lands containing petroleum or other mineral oils and gas, on which no patent at the date this act takes effect has been issued, are hereby withdrawn from sale and are declared to be free and open to exploration, location and lease by citizens of the Philippine Islands or of the United States and by associations and corporations wholly composed of citizens of the Philippine Islands or of the United States or both; *Provided, however,* That parties having heretofore filled claims for any lands containing said minerals shall be given preference to lease their respective claims, provided they file a petition to that effect within six months from the date of the approval of this act.

Section 2. All such lands may be leased by the secretary of agriculture and natural resources in the manner and subject to the rules prescribed by the council of state; said lease shall be in blocked or tracts of not more than four hundred hectares for each individual, and not more than twelve hundred hectares for any association or corporation: *Provided, however,* That at the discretion of the secretary of agriculture and natural resources, more than one lease may be granted to any one person, association, or corporation.

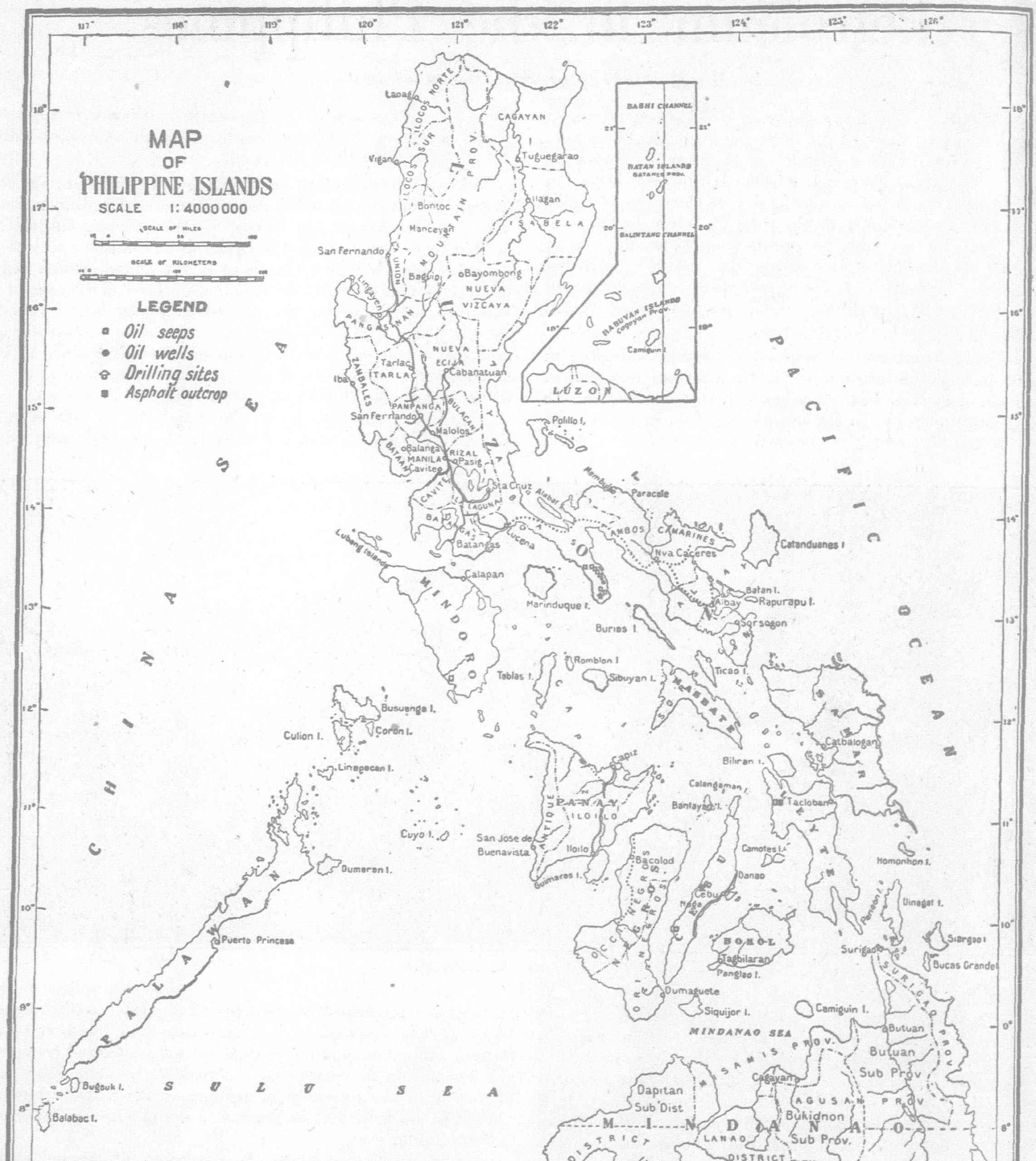


A Road Through the Mountains

Section 3. Leases under the provisions of this act shall be for a period of not more than five years each, subject to renewal on such terms and conditions as may be authorized by the council of state, and no such lease shall be assigned or sublet except with the consent of the secretary of agriculture and natural resources, and in this case, only to such persons or associations of persons and corporations as have the qualifications required of lessees.

Section 4. The exploration and exploitation of deposits of petroleum and other mineral oils and gas located in private lands shall be made only by persons, associations, or corporations having the qualifications required of lessees and under such terms and conditions as may be prescribed by the secretary of agriculture and natural resources and approved by the council of state: *Provided, however,* That any location, occupation, or use by locators

PRINCIPAL OIL LOCALITIES IN THE PHILIPPINES



Compiled by the Division of Mines, Bureau of Science, Manila, P. I. March, 1921. Under general supervision of W. D. Smith of any private land for the purpose of exploiting and working any mineral deposits pursuant to the provisions of this act shall be conditioned on just compensation.

Section 5. When this act shall have been approved by the president of the United States, as provided in section nine of the act of congress of August twenty-ninth, nineteen hundred and sixteen, such fact shall be made known by proclamation of the governor-general of the Philippine Islands, and this act shall take effect on the date of such proclamation.

Approved, August 31, 1920.

In October, 1920, the council of state approved a draft of rules which had been prepared by the division of lands, and the division of mines of the bureau of science, governing operations on such lands. As these rules are too long to be inserted here, they will be omitted. Copies of the same will be published shortly.

LOCATION OF PROSPECTS.—The chief seeps and most promising prospects are located as follows:

1. Bondoc Peninsula (lower end), Tayabas province, southeastern Luzon.
2. The ozocerite veins near the town of Villaba and the asphaltic tuff near Balete, both on the northwestern part of Leyte Island.
3. Near Pidatan in central Mindanao.
4. The west coast of Cebu Island, from Alegria north to and perhaps beyond Toledo.
5. Natural gas from some deep wells in Tertiary shale on the eastern flank of the Cordillera and the low country to the east on Panay Island.

All the known oil seeps, petroleum residues, and natural gas emanations in the Philippines are associated with Tertiary sediments.

As modern petroleum exploration is carried on by trained geologists and paleontologists, we give, for the benefit of the reader who appreciates the importance of such information, the results of the co-operative work of many geologists, both government and private, extending over a number of years in the Philippines.

In view of a prevailing opinion that these islands are largely volcanic, it should be pointed out that there are many large areas where the only surface rocks are sediments—shales, sandstones, and limestones—and other areas where the volcanic rocks form a veneer only over the underlying Tertiary strata. It is in the shales and sandstones of these sediments that we look for petroleum. Such formations as intrusive diorite, granites, etc., we must avoid. The principal source of oil in the Philippines is the group of shales, with intercalcated limestone beds, which have been given the name of *Vigo*, from the type locality on the Vigo River in the Bondoc Peninsula.

The typical oil (Vigo) shale on Bondoc Peninsula may be described as (quoting from report of Pratt and Smith, page 331) consisting "of fine-grained shale and sandy shale interstratified in thin regular beds from 5 to 10 centimeters in thickness. Occasional beds of sandstone occur varying from 10 centimeters to 1 meter in thickness. The fine-grained shale is gray, blue, or black, and is made up almost entirely of clay. The blue or black, fine-grained shale in the Vigo formation usually emits a slight odor of light oils upon fresh fracture, and in some outcrops is highly petroliferous. The material loses this odor and assumes a light gray color after it has been exposed to the air and has become thoroughly dry." These shales contain numerous foraminifera of the genus *Globigerina*, which may be the source of the oil. Although present numerously, these organisms did not appear to comprise any large percentage of the volume of these shales. However, shales from the islands of Leyte and Mindanao contain them in very great numbers.

These Vigo shales are found to be several thousands of feet in thickness in several parts of the Islands and much thinner in others. The age of these shales is either Lower Miocene or Oligocene, and they are easily recognized by certain index fossils which have been determined by paleontologists. Some of the most characteristic are the round, globular protozoan, know as *Globigerina*; a small bivalve shell known as *Corbula socialis*; a flat-topped cone shell known as *Conus ornatissimus*; another gastropod or snail with a high spire, and very much tuberculated, known as *Cerithium jenkinsi*; and a much-coiled cast of worm borer known as *Vermetus javanus*. These fossils are well known in connection with the oil shales of Java. Specimens of these may be seen in the bureau of science collection.

The Canguinsa sandstone, a buff-colored, very porous, and somewhat tuffaceous formation above the Vigo, may prove to be the reservoir for holding the oil.

STRUCTURE.—It has long been known that an important condition for the accumulation of commercial supplies of oil is the anticline or arched flexure of the rock strata. In southern Sumatra, according to one authority, no oil has been obtained in commercial supplies except by boring on the crest of these anticlines. The double flexure where the anticline plunges at both ends, forming a dome, affords the most ideal conditions. By no means all of the productive wells in the world are located on anticlines, but in new country it is desirable to locate the most favorable structures for "wild-catting."

The Philippine Islands, as a whole, consist of masses of sediments, with other rocks of an igneous nature cutting through them, in some places lying on top; the whole series has been folded in various directions and, along with this folding, has occurred in some places very considerable faulting. It is, as a rule, a good plan to avoid these faulted areas.

SPECIAL LOCALITIES.—*Bondoc Peninsula* (from information published in a former press bulletin of the bureau of science). The seeps are in highly inclined strata which are probably in all cases part of the structure of anticlinal folds. From this association it is believed that the petroleum in this field has, in accordance with the general lay of petroleum accumulation, tended to collect in the crests of anticlines.

The petroleum occurs, associated with certain horizons, in an extensive series of beds of sandstone and shale (Vigo shale), which is similar in character to the oil-bearing rocks of productive fields, notably those of Japan. The principal seeps are found in the upper part of this series in a zone designated as the Bacau stage, which is predominantly shale but which contains subordinate beds of sandstone. In its seepage, the petroleum is associated with the shale rather than with the sandstone, and may be observed in some cases to come directly from the shale. Beneath the surface, where closed lenses of sandstone probably exist, the principal accumulation of petroleum would be expected to be found in the more open, sandy zones. At the surface the light oil appears to have escaped readily from the coarse-grained beds and to have been retained only in the fine-grained shale.

The structure of Bondoc Peninsula includes a number of anticlinal folds and the conditions along some of these anticlines are considered favorable for the accumulation and retention of the petroleum, whether it occurs in all or in any one of the horizons at which it is suspected to occur.

The following localities are considered most favorably as sites for the location of series of wells to explore the petroleum-bearing rocks of Bondoc Peninsula. They are arranged as nearly as possible in the order of their suitability from a geological standpoint, locality No. 1 being preferable to locality No. 2, etc. However, owing to conditions discussed in the full report published in the Philippine *Journal of Science*, Sec. A 8 (1913) 301, it is possible that oil may be encountered at any one of the sites, even though it be absent elsewhere. There are many places other than those listed which would be considered favorable in case exploration of any of the sites herein recommended is successful.

Locality No. 1.—The Maglihi Anticline in the southeastern part of the peninsula, near Mount Morabi.

Locality No. 2.—The Maglihi Anticline in the valley of the Bahay River.

Locality No. 3.—The Central Anticline in the vicinity of Balinsog or Bacau.

Locality No. 4.—Ayoni Anticline, about 1,500 meters inland from the mouth of the Ayoni River on the west coast.

Locality No. 5.—The Malipa Anticline near Cabongahan.

Leyte. It has been known since 1890, at least, that petroleum existed in Leyte Island, near the town of Villaba.

Rock asphalt was discovered in 1913 by a Filipino Forest Ranger and there followed a period of active claims-taking. Not until the year 1920, however, was the deposit opened up commercially.

The extreme northwestern peninsular portion of Leyte, as far south as Biliti, is worthy of careful exploration. The geological formations here are, according to Pratt, a continuation of those on Bondoc Peninsula.

In Leyte, petroleum is encountered at two places; it seeps from the upturned edges of the Vigo shale, and oozes from the base of a hill which consists of a clayey tuff-sandstone belonging to the Canguinsa. Residual bitumens occur in the Canguinsa and in the Malumbang series; one questionable outcrop of solid bitumen was observed in loose débris which appears to overlie the Vigo shale, and a heavy, black oil, or viscous bitumen, was found in sandstone near the base of the Vigo.

The bitumens in the Canguinsa are encountered in five types of deposits: (1) solid bitumens in lenses or pockets which tend to follow bedding planes, but which also cross the bedding irregularly along fractures and cavities; (2) solid bitumens in regular fissures which penetrate the clay-tuff independently of bedding planes; (3) in non-uniform mixtures of bitumen-impregnated, clay-tuff fragments and subordinate solid bitumen; (4) viscous, or semi-liquid, bitumen-cementing breccias of flintlike limestone, small domes of which protrude from the surface of the clay-tuff formation; and (5) viscous or semi-solid bitumen filling the centres of hollow, cylindrical concretions which occur in the clay tuff, with their longer axes nearly vertical and at right angles to bedding planes. The bitumen in the Malumbang series has impregnated porous limestone and sandstone, forming what is known commercially as rock asphalt.

It is this material impregnating the porous limestones of that region which the Leyte Asphalt and Mineral Company are developing. The deposit is said to be of considerable size.

Mindanao. The Pidatan district, the region at present staked for oil, lies in the drainage of the Malitubog River near the Cotabato-Lanao boundary. It is best reached by way of Cotabato and Fort Pikit, thence over a gradually ascending trail leading northward. The country is mountainous and thickly covered with tigbao and cogon grass.

The principal rocks of the region are shales and sandstones belonging in part to the Vigo group. Outcrops of Vigo shales occur near Bao and Banisilang on the Malitubog. The structure near the seep is reported to be faulted, and the beds dip in a monocline to the south. The angle becomes much steeper as the seep is approached.

There is only one seepage known at present, and this is located on the north bank of Kirusoy creek.

Cebu. Although there are several strong seeps on the west coast of Cebu, the geologic conditions are not as favorable as those on Bondoc Peninsula. At Alegria on the southwestern coast the seep is located near a fault in a very sharp fold and the topography is such that drilling operations would be expensive. Farther north, at the old Smith Bell well near Toledo, the rocks are found in a monoclinal attitude in which there are minor folds. Detailed work in that region has revealed some unfavorable structural features. However, between these two localities, or farther to the north of Toledo, favorable structures might be located.

Panay. On Panay the shale beds yielding natural gas are generally monoclinal; that is, dipping in one direction to the east, away from the main cordillera of the island. From work already done in that region there is at least one well-defined anticline, known as the Maasin Anticline, which might be a favorable location for a test well. However, it should be stated that some comparatively deep artesian wells in that region, which have reached a depth of 537 meters, have shown so far only small amounts of natural gas and salt water.

Chemical and Physical Properties of Philippine Petroleum and Natural Bitumens.—Philippine petroleum has a paraffin base and is usually reddish to violet in color. It is quite dear, and closely resembles oil from Burma and Sumatra. Table 2 gives a fairly complete analysis made by Richmond, and others, former chemists of the bureau of science. Table 3 contains an analysis of the petroleum residues from Leyte Island. The paraffin content of Philippine petroleum is very high; a beer bottle full of oil which one of the geologists collected in 1908 from the Toledo well, and put, imperfectly sealed, into one of his saddle

Table 2.—Physical and Chemical Properties of Philippine Petroleum*

Description of Petroleum	Crude Oil.		Distillation Products.						Residue above 400° C.	Remarks.
	Color Transmitted light.	Specific Gravity	Gasoline, to 150° C.		Kerosene, 150° to 300° C.		Heavy Oils 300° to 400° C.			
			Volume	Specific Gravity	Volume	Specific Gravity	Volume	Specific Gravity		
Tayabas Bahsy well I., depth 40 m. Sampled by division of mines 24 hr. after well had been drain ed..................	Brown to wine red	0.8325	39.0	0.770	44.5	0.850	16.5			Flash point 0° C. (32° F.). sulphur absent; initial boiling point, 91° C., paraffin, 8.1 per cent.; specific gravity at at 15° C.
Cebu, P. I.:										
Well at Toledo, Cebu......	Dk. brown	0.885	6.2	0.762	42.32	0.832	38.3	0.901	13.17	Residue above 375° C.; specific gravity at 15° C.
Oil seep at Alegria, Cebu......	Dk. brown		17.5		30.5		35.0			Residue contained foreign sediment.
Leyte, P. I..........		0.926								Flash point 74° C. (166° F.).

*Analyses by Richmond, and other chemists of the Philippine Bureau of Science.

bags, was found, on unpacking three days later, to contain no oil; but it was half full of solid paraffin.

PIDATAN, MINDANAO

Specific gravity at 15.6°C	0.9297
Distillation:	
Light oils (below 150°C.)	None
Burning oils (150°-300°C.)	45 per cent. by volume
Heavy oils (300°-400°C.)	49.5 per cent. by volume
Residue	5.5 per cent.
Sediment	Large amount
Water	Trace
Base	Paraffin
Main calories or gross heating value ...	12,495
Available heating value	11,189
Sulphur	1.56 per cent.

TABLE 3.—PHYSICAL PROPERTIES OF NATURAL BITUMENS FROM VILLABA, LEYTE.

Property	Outcrop A and B	Property	Outcrop A and B
Specific gravity ...	1.05	Luster ...	Brilliant
Hardness... ...	2.00	Structure ...	Columnar
Color	Jet black	Fracture ...	Conchoidal
Streak	Black	Flows ...	Intumesces, softens and flows imperfectly at 150° C.

Conclusions

1. That there is a very high grade of petroleum in the Philippine rocks is proved beyond question.

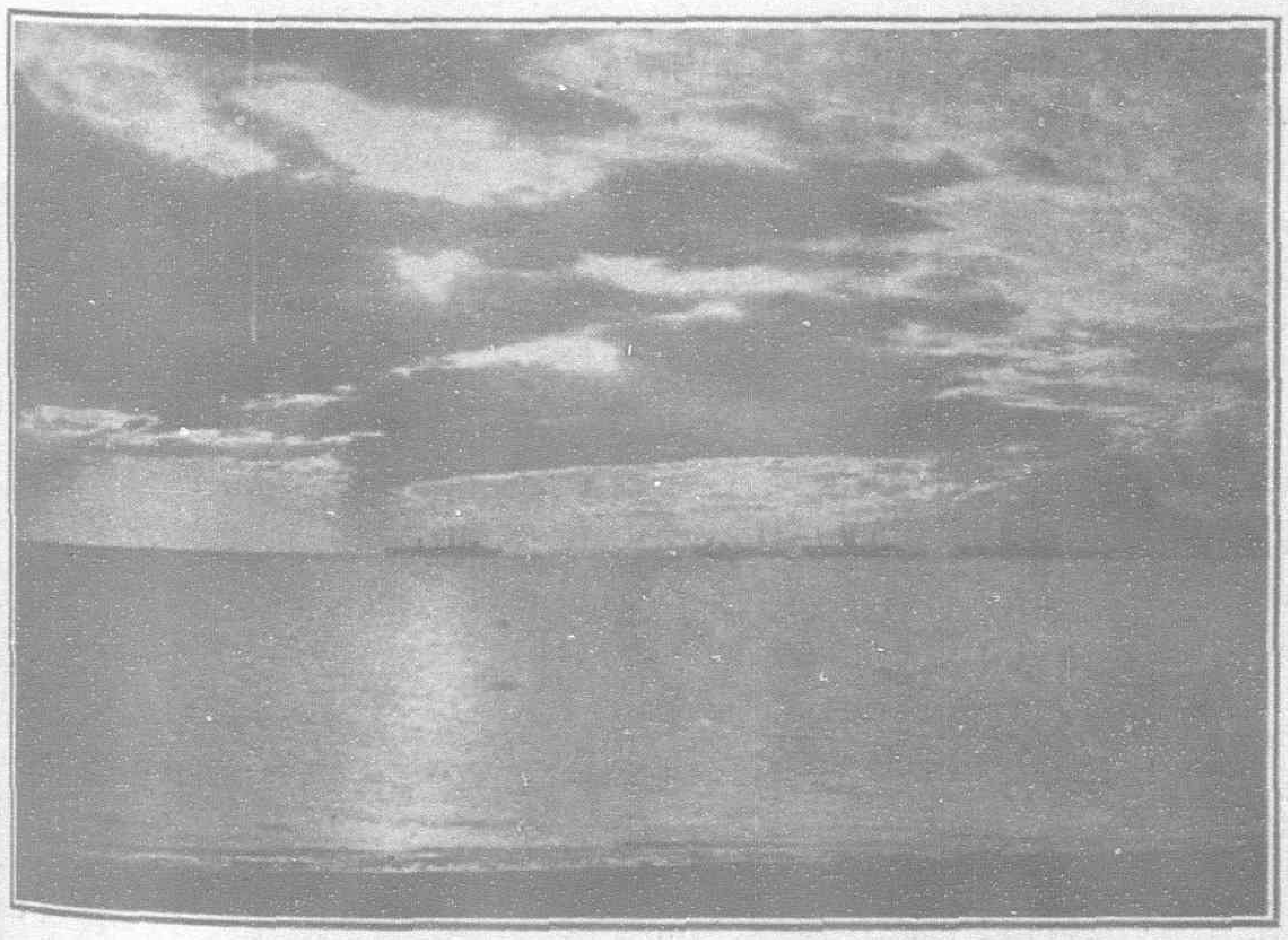
2. The source of this oil appears to be in the Vigo shales which contain microscopic organisms of a very simple structure, known as Foraminifera. No diatoms, such as are associated with the Californian deposits, have so far been seen in the Philippine shales.

3. In several parts of the Islands, notably the Bondoc Peninsula, the structure appears to be quite suitable for the accumulation of commercial supplies of oil.

4. The kinds of rocks and structure of these, as well as the oil contained in them, are very similar to those of Sumatra, Burma, Formosa and Japan.

5. The quantity of petroleum is unproved and can be proved in only one way; namely, by drilling.

6. In view of the world-wide shortage of petroleum and its products, competent and financially able concerns would be justified in doing "wild-cat" work in the Philippines. A word of caution to those who lack experience in the business or who are not amply supplied with large funds should be given at this time. The oil game is perhaps the most expensive that man plays and, though great fortunes have been made out of oil, on the other hand, thousands of people with modest incomes have been ruined in the same game.



Sunset in the Luneta

Mountain Road in Albay Province

The division of mines of the bureau of science has specimens of Philippine oils and of all the kinds of formations, collections of fossils occurring in the oil fields, and the latest literature dealing with the prospecting and the development of oil fields, all of which are gladly placed at the disposal of the public.

Real Enterprise in Engineering

With the rapid strides made in the engineering world there stands well to the fore the activities of the firm of Dorman, Long & Co. which, since its foundation in 1876 by Mr. A. J. Dorman and Mr. A. de Lande Long, has made continual progress and large extensions. Early manufacturers of angles, bars and iron girders (this latter article being imported prior to manufacture by the firm in England), they have rapidly developed to the extent that the following table summarizing their properties and output shows:—

8 Ironstone Mines	producing	annually	1,650,000	tons of	ironstone
1 Quarry	,,	,,	300,000	,,	limestone
7 Collieries	,,	,,	1,835,000	,,	coal
1000 Coke Ovens	,,	,,	865,000	,,	coke
			62,500	,,	tar
			12,500	,,	sulphate of ammonia
			2,000,000	gallons	crude benzol
32 Blast Furnaces	,,	,,	1,078,000	tons of	pig iron
32 Steel Furnaces	,,	,,	1,000,000	,,	ingots
17 Rolling Mills	,,	,,	750,000	,,	plates

To cope with their large extensions the company has increased its capital from time to time until it now stands at £7,500,000.

The Natural Resources of Davao*

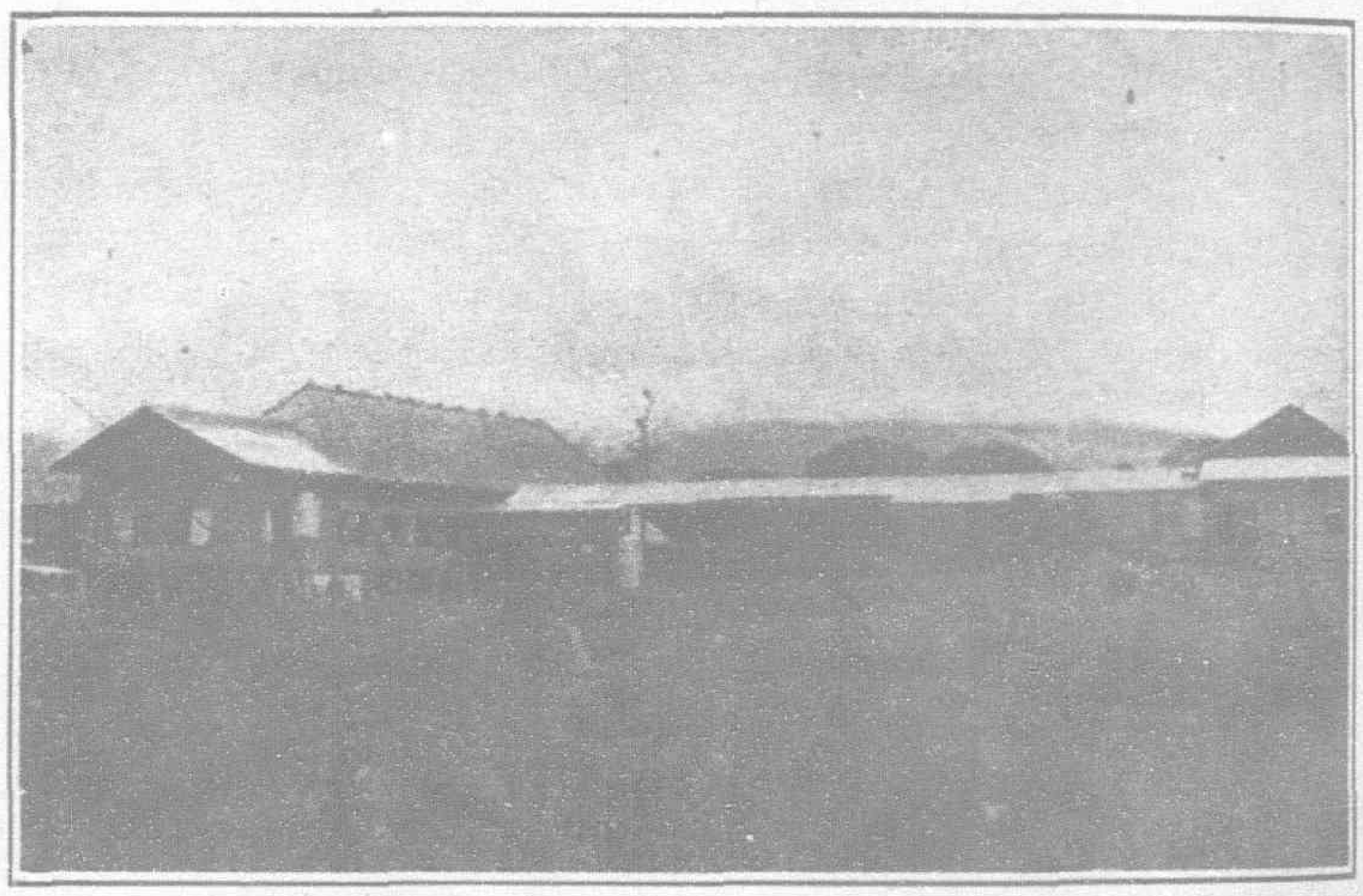
Opportunities for Development

By P. J. Wester, Agricultural Advisor

THE province of Davao is located between 125° and 126° 40′ east longitude, and between 5° 20′ and 8° north latitude, in the southeast corner of the Island of Mindanao. It is bounded on the north by Agusan province, on the east by the Pacific Ocean, on the south by the Celebes Sea and on the west by Cotabato and Bukidnon, and has a coast line of more than 600 kilometers. With an area of 7,486 square miles Davao nearly approximates in size the state of New Jersey, which has an area of 7,815 square miles, and it has a population of about 101,000 inhabitants according to the census of 1918.

According to the most recent surveys and estimates of the bureau of forestry, Manila, 90.2 per cent., or 1,749,420 hectares of the area of Davao is still commercial forest, a greater area of woodland than that in any other province in the Philippines, Cotabato excepted. The land in cultivation includes but 30,730 hectares or 1.6 per cent. of the total area. The open land and cogonales is probably not less than 50,000 hectares. These figures may require some readjustment, since there is an unexplored area of 6.1 per cent., or 117,564 hectares. There are quite extensive mangrove swamps at the head of the gulf.

Hydro-electric and Ice Plant of the Ohta Development Company, Mintal, Davao



Hospital for Plantation Laborers operated by the Ohta Development Company, Mintal, Davao

In addition to the mainland Davao includes four fairly large islands, Samal and Talikud, near the head of the Davao Gulf, Bulat and Sarangani off the southernmost point of the Island of Mindanao, and several smaller ones scattered along the coast here and there.

Geographically Davao Gulf is the central feature of Davao province and practically all plantations in the province extend inland from its shores. Few people realize that here in the southeast of the Philippine Archipelago there is a bay more than three times as large as the Bay of Manila.

The province itself is constituted of the eastern slope of the mountain chain that, roughly speaking, extends from north to south, west of Davao Gulf, the Agusan Valley south of the eight parallel, and the large peninsula to the southeast, terminating at Cape San Agustin.

The topography of Davao is varied. There are large level or undulating plains, there are gently rising mountain slopes and rugged, precipitous mountains. The country is everywhere well watered by numerous streams and rivers, which, thanks to an evenly distributed rainfall, rarely or never run dry.

In a general way, the great bodies of agricultural land in Davao might be considered in two large regions. (1) The country in northern Davao drained by the Aguasn River and its tributaries. This spacious, fertile country belongs topograpically to the Agusan Valley and it is one of the finest bodies of virgin agricultural land in Mindanao. The present great drawback to this district is the absence of transportation facilities; and as yet the entire tract is lying idle, barring a few isolated patches of semi-cultivated land occupied by the native inhabitants. (2) The water-shed of the Saug, Libuganon, Tagum and Hijo Rivers at the head of Davao Gulf and the country to the west and south thereof to Mount Apo and Malalag Bay west of the gulf, and east of the gulf to Mapanga Bay.

There are other valleys of greater or less dimensions of equally fertile land in the remainder of Davao, for instance, the country around Lais and Malita, at Kuabo, and north of Mati, but these areas are not comparable in size with those of the two large regions first mentioned. In the other coast districts, even where the mountains approach the coast, when the streams come within sight of the sea, as a rule the surrounding country spreads out in alluvial valleys of great fertility, sometimes small, not more than a few hundred hectares, to larger plains, sometimes exceeding a thousand hectares in area. Several of the Davao plantations are situated in such valleys. Though most of the better agricultural land in Davao is below this elevation, the Guianga plain to the northwest of the town of Davao ascends from 300 to over 600 meters altitude.

The southern part of Davao west of the gulf, from Sarangani Channel to Malalag Bay, is mountainous and forested from the

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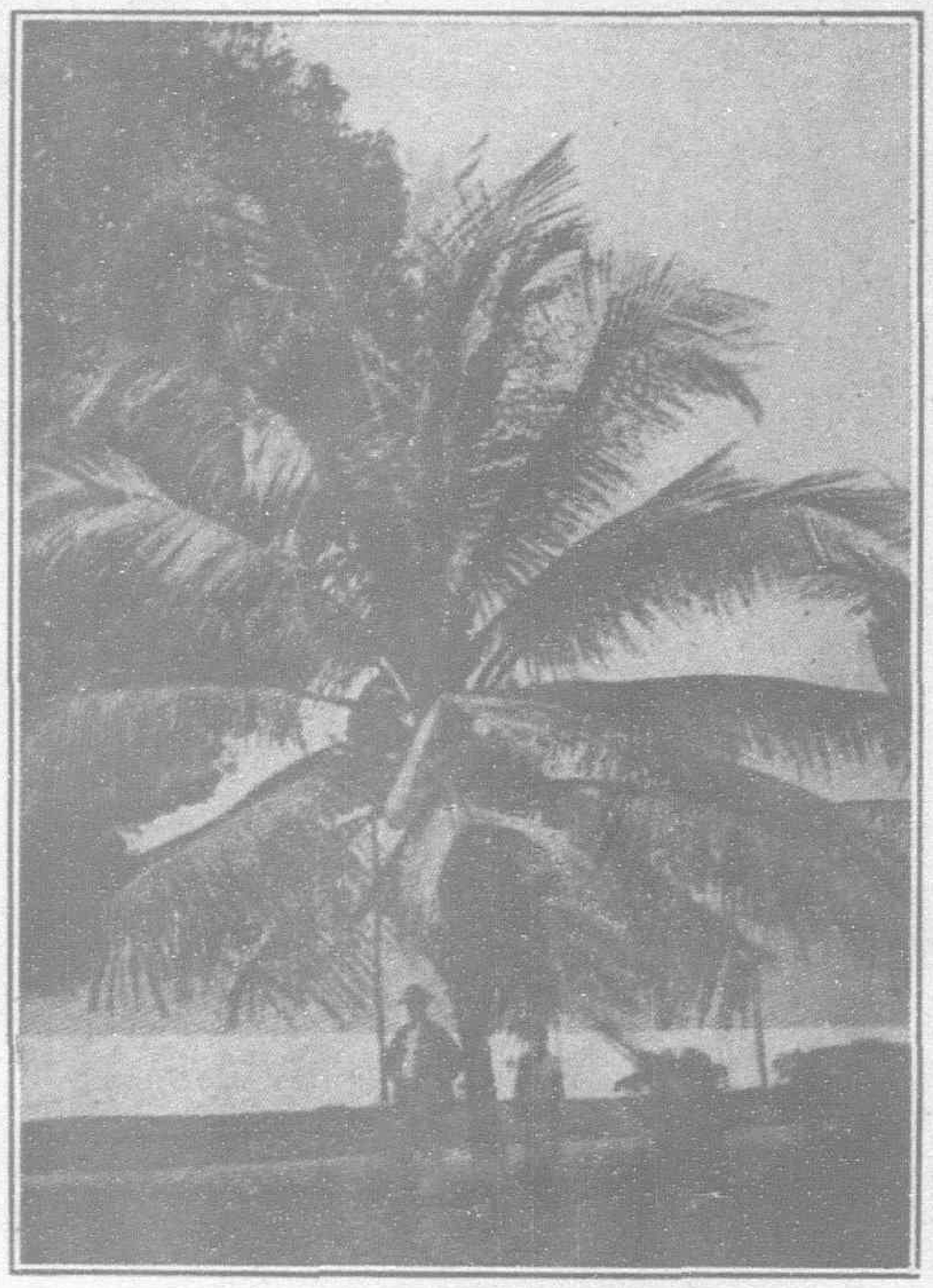
* The writer wishes to acknowledge his indebtedness to Col. Ole Waloe, Philippine constabulary, for access to the constabulary monograph of Davao, and to Mr. Carl M. Moore, superintendent of schools in Mindanao, for access to a report on agriculture in Davao by Mr. W. F. L. Asimont. The map of Davao has been traced from a map of Mindanao furnished by Mr. H. E. Neibert, supervising surveyor, bureau of lands. The map of the Malalag Bay has been traced from a map furnished by the director of the U. S. coast and geodetic survey, Manila.

Cotabato border to the coast. It is a rugged country, rich in timber but relatively unimportant from an agricultural point of view. Still, notable plantations are located here, such as those of the Culaman Plantation Company at Malita, one of the largest and most successful estates in Davao, and the Lais Development Company in Lais; and it is about Malita and Lais that the cultivation of rubber (para and castilloa) and robusta coffee is concentrated in Davao.

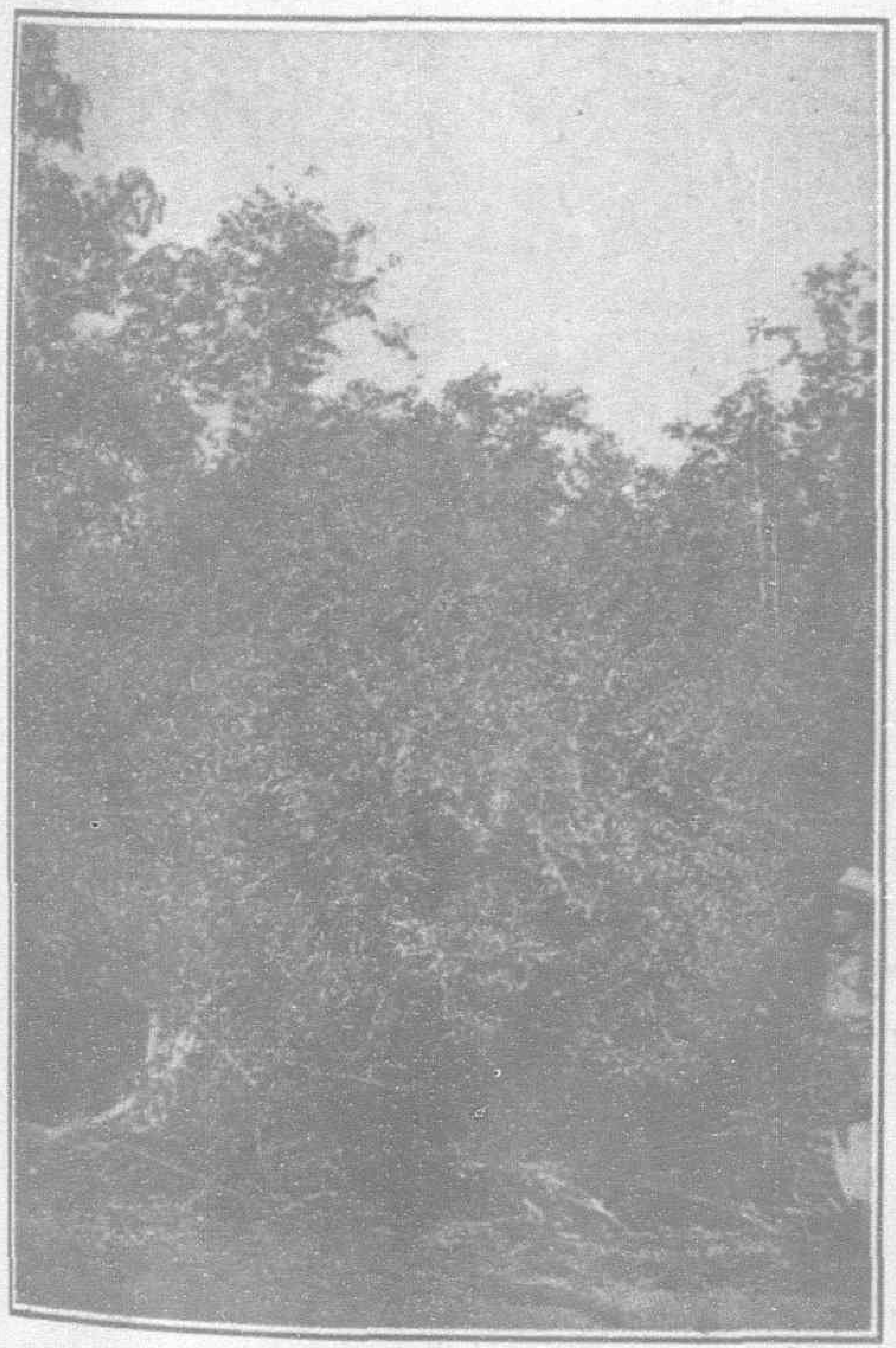

Cocoa-nut in Bearing. Mati, Davao

From Malalag Bay and northward the country assumes a different aspect. The mountain ranges recede from the seashore and give room for broad, undulating plains, gradually rising as one travels westward, partly in virgin forest, in part cleared and overgrown with cogon, *imperata cylindrica*, a tall, perennial grass. This is, in fact, a section of one of the large agricultural regions of Davao.

The narrow peninsula east of the gulf, from Kuabo southward, is a rough, mountainous land covered with virgin forests. The agricultural areas are small and located on the west coast of the peninsula.

The land from Mati to Manay for some distance inland is the principal cattle district in Davao.

In the river valleys the soil is, as a rule, a friable, rich alluvium, free from boulders and stones and frequently of great depth. Lands with good agricultural soil three to four meters deep are by no means uncommon. Now and then a sandy loam is encountered. Heavy clay soils are the exception. On the higher slopes of the mountain range facing Cotabato much of the soil is of volcanic origin and is exceedingly fertile.


The Buol, *Ximenia americana*. Malalag, Davao

The long coast line is indented by several large bays, such as Mapanga, Kuabo, Puhada, Mayo, Karaga, and Kateel.

Good anchorage and harbors for motor boats are located at the following points: Astorga, a few kilometers north of Santa Cruz; Butulan, north of the Sarangani Channel; Kalian just north of Kalian Point; Kuabo, on the bay of the same name; Mapanga on the bay of the same name; Patulangan, on the east coast of Davao Gulf just north of Santa Cruz; Tagabuli, a few kilometers south of Santa Cruz, at the mouth of the river of the same name; and Tubalan, on the east coast of Davao Gulf north of Malita.

Patoko and Tumanao, on the west coast of Sarangani Island afford good anchorage for steamers and motorboats. Mati, at the head of Puhada Bay has a good harbor for ocean-going steamers. This is also true of Monserrat, located some distance south of Kuabo Bay on the west coast of Davao Gulf.

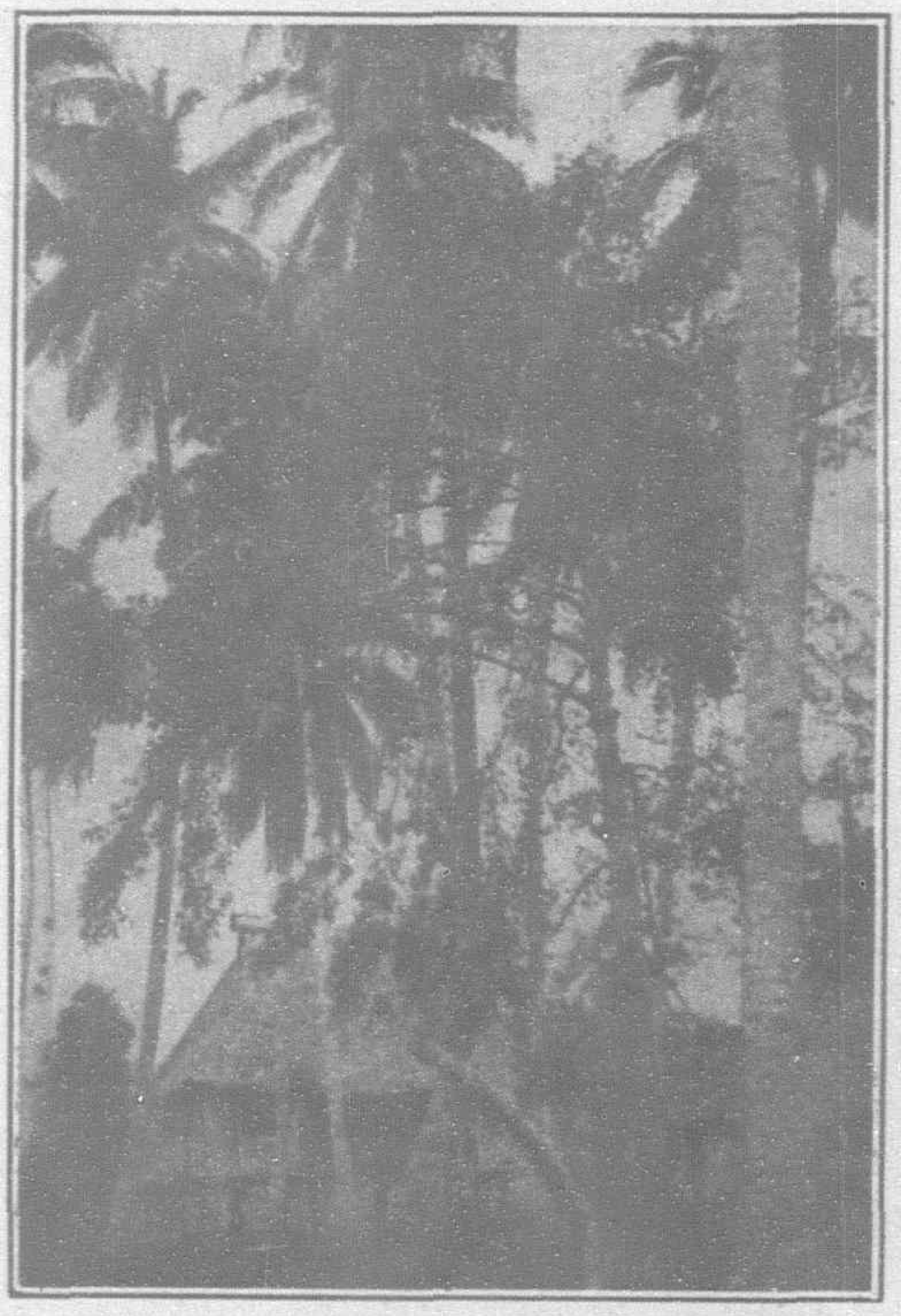
Sago is common and grows luxuriantly in many parts of the Province. Sigaboy, Davao

The best harbor in the province is Malalag Bay, inside Kolapsin Point on the eastern shore of Davao Gulf.

Davao has a large number of streams and rivers of which the following are the largest and the most important:

The *Agusan* River, which originates west of Karaga and flows first westward and then in a northerly direction until it enters Agusan at Patrocinio and empties into Butuan Bay, on the north coast of Mindanao (See *Agusan: Its Natural Resources and Opportunities for Development*, in the previous issue of *Philippine Agricultural Review*. The Agusan is navigable for motor boats to Veruela in Agusan province and thence by baroto to Compostela, Davao.

The *Kateel*, emptying at Kateel, has a considerable volume of water but the current is too rapid to permit navigation.


Kandiis, *Garcinia* sp., a native unidentified fruit tree related to the mangosteen. Sigaboy, Davao

The *Davao* River, emptying at Davao, the provincial capital, is navigable for small motor boats for about ten miles inland.

The *Lasang* River is navigable for barotos for about four miles.

The *Libuganon* rises in the mountains in the northwestern corner of Davao and joins the Sang River at Pagsabangan. Thence to the sea it is known as Tagum River which is said to be navigable for small boats for about 25 miles inland.

The *Saug* River, already mentioned,

is navigable for barotos to Macgum.

The *Tagum* River, formed by the confluence of Saug and Libuganon Rivers at Pagsabangan is navigable to this point by motor boats drawing 5 feet of water. On a much smaller scale the Tagum River and its valley is very similiar to the wooded banks of the Agusan on the north coast of Mindanao.

Padada, Hijo, Sumlug, Bitangan, Karaga and *Honoon*, are other somewhat less important rivers with a smaller volume of water, in addition to which there are innumerable small short streams and water courses that wind their way from the mountains to the sea all along the coast.

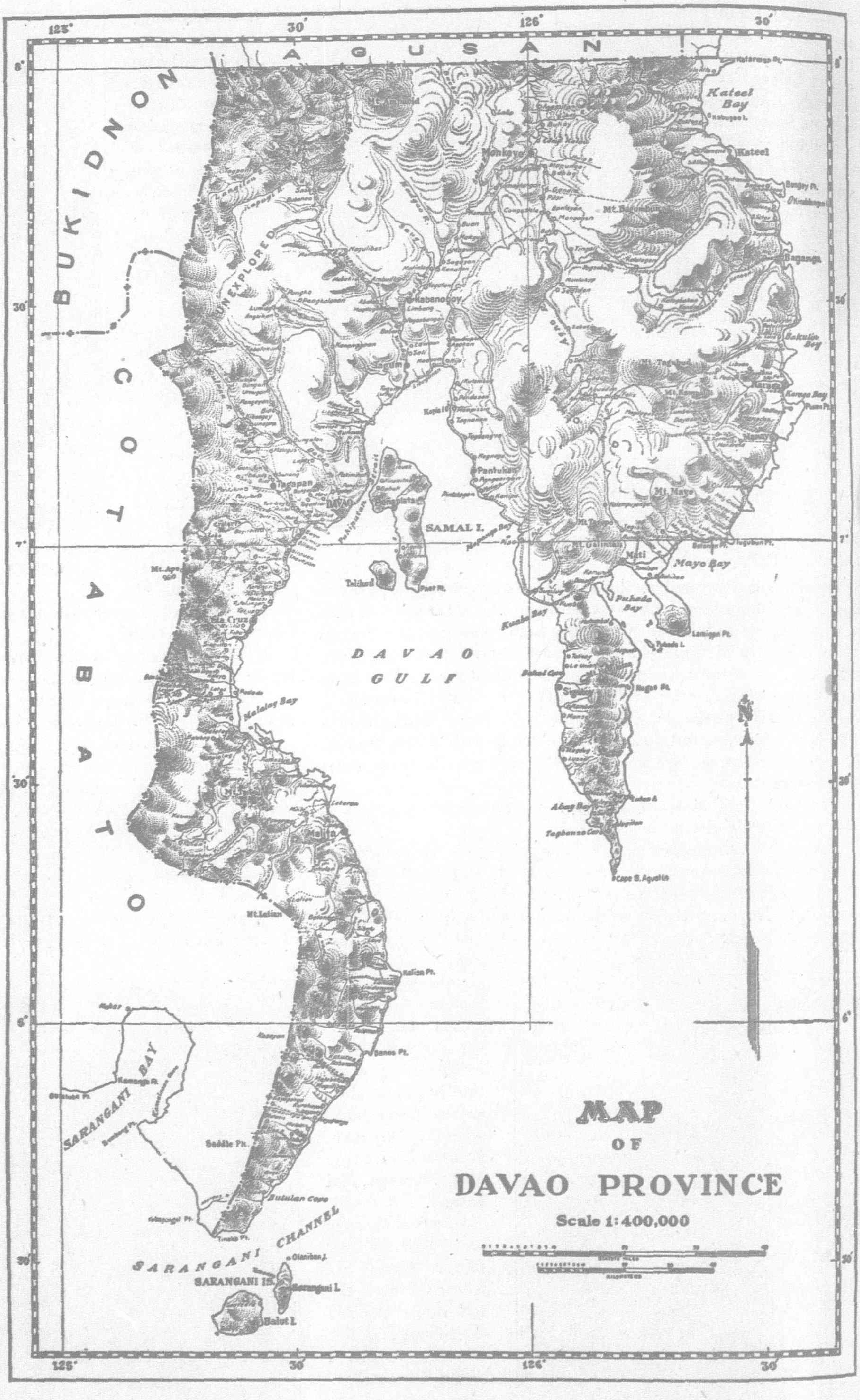
With the exception of Tagum the rivers in Davao are of little value for transportation purposes. On the other hand the numerous falls and rapids afford rich opportunities for the construction of power plants for plantations, for industrial and lighting purposes and for transportation.

The highest mountain is Apo, 2,883 meters high, located near the Cotabato boundary, southwest of Davao; Hamihitan on the narrow peninsula south of Puhada Bay ascends to an elevation of 1,607 meters, and Latian southwest of Lais is 1,586 meters high. Several other mountains reach an altitude of 600 to exceeding 1,000 meters.

Climate

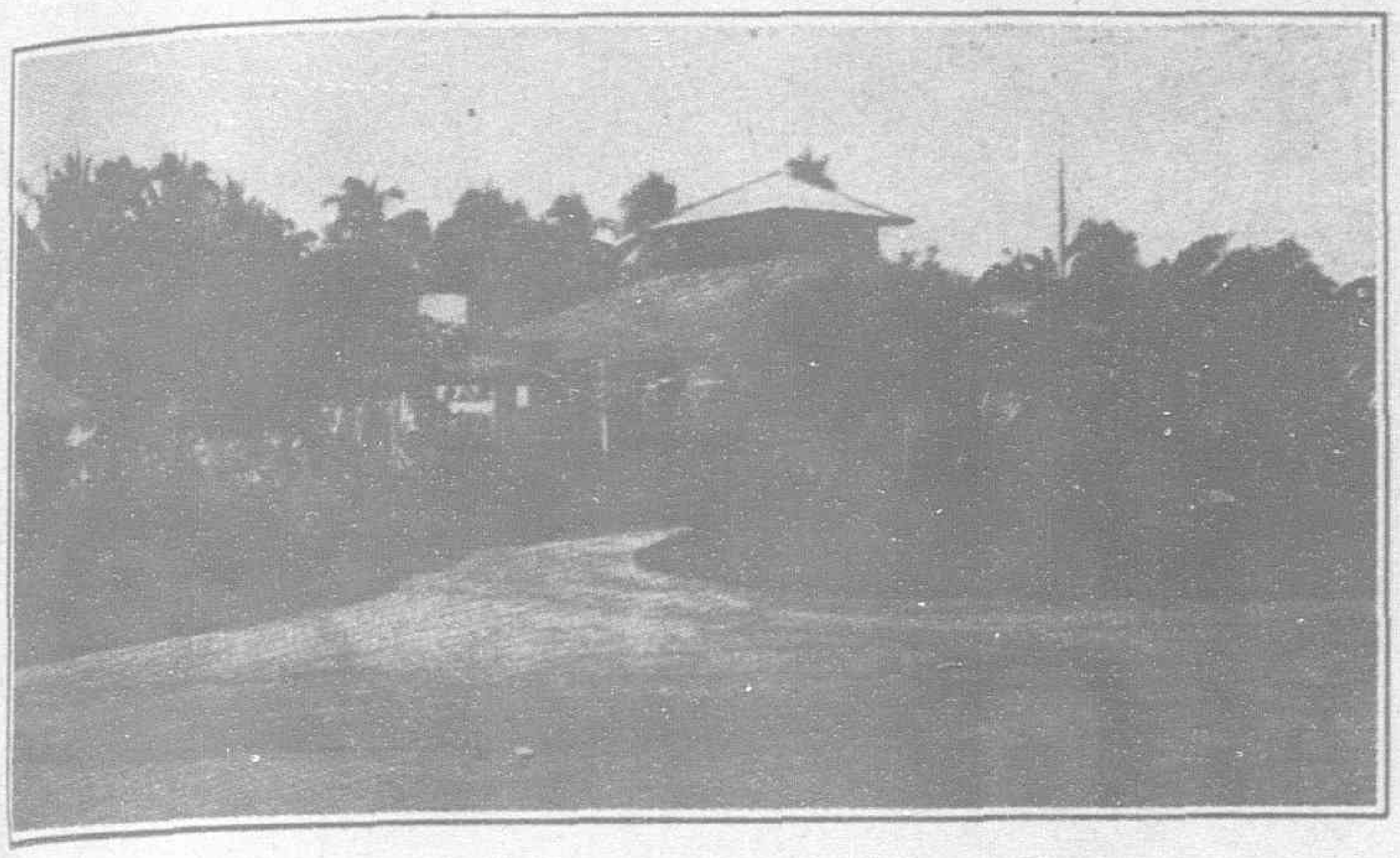
In a territory so large and having the topographical formation characteristic of Davao naturally there is considerable variation in the precipitation in the various districts, but in the main Davao has a very evenly distributed and ample rainfall. In fact, the capital of the province has a more equal distribution of rainfall than any other point in the Philippines where observations are made at present and it is fairly typical of the province as a whole.

The temperature varies, of course, with the elevation. On the lowlands it is rather warm and sultry during the day but the nights are always cool and pleasant. Further inland on the mountain slopes above 300 meters the heat is never oppressive.



Population

The population of Davao is about 101,000, divided into Filipinos (the majority of whom belong to tribes peculiar to Mindanao, including the Bagobos, Bilans, Mandayans, Tagacaolos, Atas, Culamans and Moros), about 10,000 Japanese and some



The Provincial Government Building, Davao

300 Chinese. One hundred Americans, perhaps, are living in the province, mostly planters.

Of the native tribes the Bagobos occupy the east coast of Davao Gulf from Digos to Talomo, including the mountain slopes to Cotabato and the Guianga plain. The Tagacaolos inhabit the country from Digos to Lais, and furnish most of the native plantation labor in the province. The Culamans are scattered from Padada to Sarangani on the east coast and from Kuabo to Cape San Agustin on the west coast of Davao Gulf. The Bilans occupy Sarangani Island and the country immediately to the north thereof, and there are some also here and there in the mountains north of Cape San Agustin. The Mandayans occupy the mountain range from Cape San Agustin to Agusan and the valleys of Agusan, Hijo and Tagum Rivers, north of the gulf. The Atas live in the interior between Davao and Libuganon Rivers. Remnants of the invading Moros are settled on Samal and Sarangani Islands, at the mouths of the Tagum, Hijo, Lasang and Sumlug Rivers, and in some villages on the Pacific coast between Manay and Mati.

The Japanese are occupied in growing abacá and cocoa-nuts both as owners of and laborers on plantations. The Chinese are traders.

On the face of it, from the above statement, it would appear that labor is fairly plentiful in Davao, whereas the opposite is true. The natives are either caring for their own small farms or they are occupied in other pursuits, and new estates that are opened in the future must needs import labor from the Visayas or Luzon.

Historical Review

Davao is the "youngest" province in the Philippines. Its history is recent and scant and is rather in the making and in the future. But little is known of Davao prior to about 1823, until which year the Bagobos inhabited the coasts. Moro pirates then arrived and drove the Bagobos to the hills, who sent emissaries overland to the Spanish military post at Cagayan, Misamis, for aid against the Moros. As a result the Spaniards dispatched an expedition by sea to Davao, which, aided by the native inhabitants, drove out the Moros and hoisted the Spanish flag. Davao was occupied by the American army in 1900. The military government continued in force until 1914, when civil government was established and Davao was made a province in the department of Mindanao and Sulu.

Agricultural Industries

Reliable export figures for Davao are not available but in part may be surmised from the following table showing the areas planted to agricultural crops, furnished by Mr. Antonio Peña, chief, division of statistics of this bureau. Of the below named products only abacá and copra are exported.

AGRICULTURAL CROPS IN DAVAO, 1918.

Crops	Area *Hectares*	Quantity	Value *Pesos*
Abacá	17,983	7,085	4,550,728
Cocoa-nuts	[b]1,014,742	[a]542	[d]96,839
Rice	7,470	[c]76,891	361,108
Corn	468	[c]3,705	14,879
Tobacco...	41	[a]19	7,586
Coffee (est)	—	9	4,800

[a] Metric tons. [b] Trees. [c] Hectoliters. [d] Total value of all products.

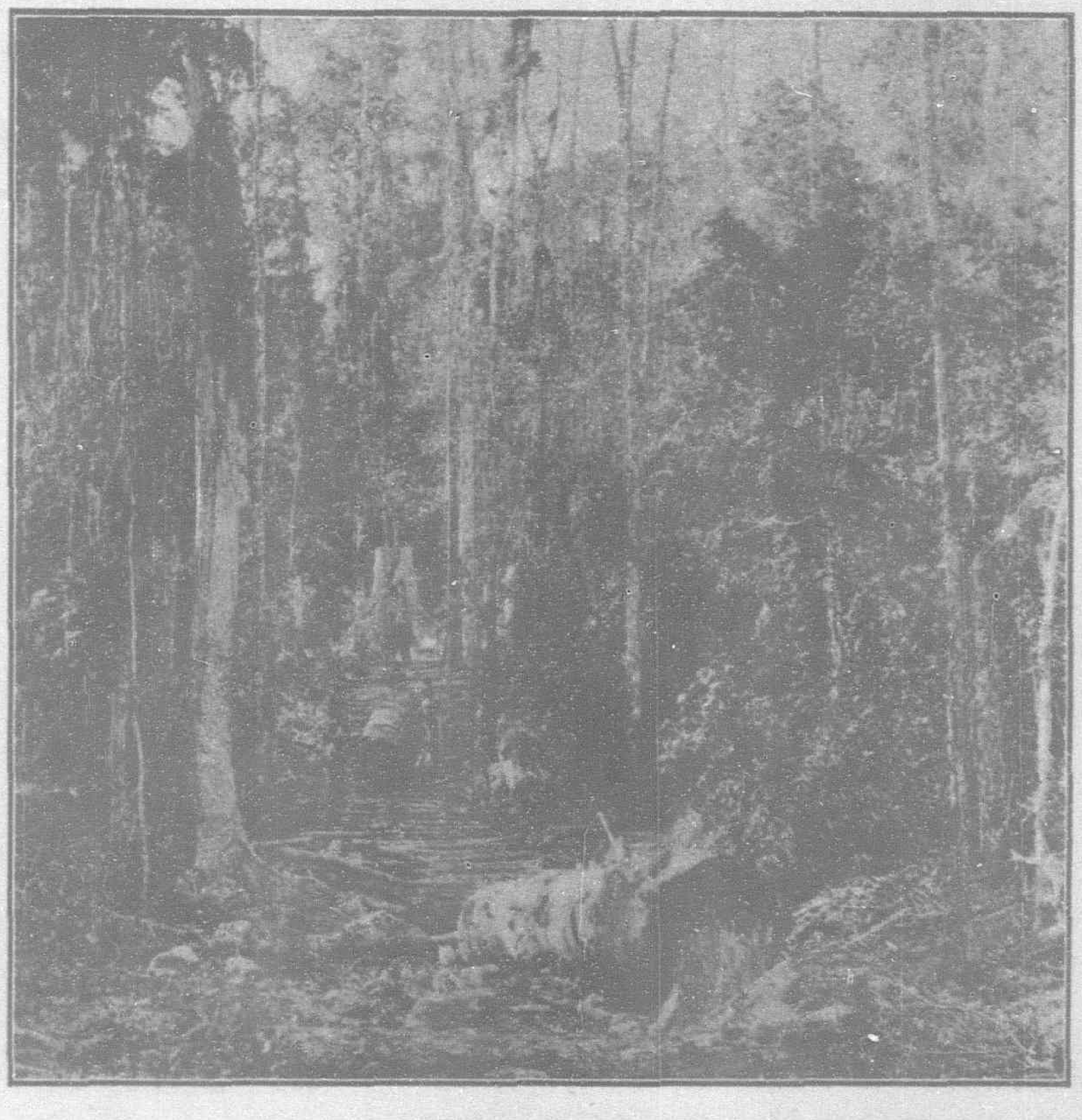
According to these figures, if we reduce the number of cocoa-nut trees to area, calculating 204 to the hectare, or 7 meters apart, there are 45,200 hectares planted to cocoa-nut palms in Davao, one-third of which are estimated to be in bearing. The cocoa-nut ranks first if area is considered; if crop values are the index abacá is by far the leading crop. In fact, notwithstanding its recent development Davao already ranks sixth among all the provinces in the archipelago in abacá production, and in quality Davao abacá outranks the product of all the major abacá districts in the Philippines. By far most of the abacá is produced on plantations located around the gulf. In value of the product rice ranks second among the agricultural crops of Davao, but a large quantity of rice is still annually imported. Kateel is the most prominent rice district in the province.

The production of other crops is insignificant.

The vegetables in Davao do not differ very materially from those grown in other parts of the Philippines except that fewer kinds and smaller quantities are grown.

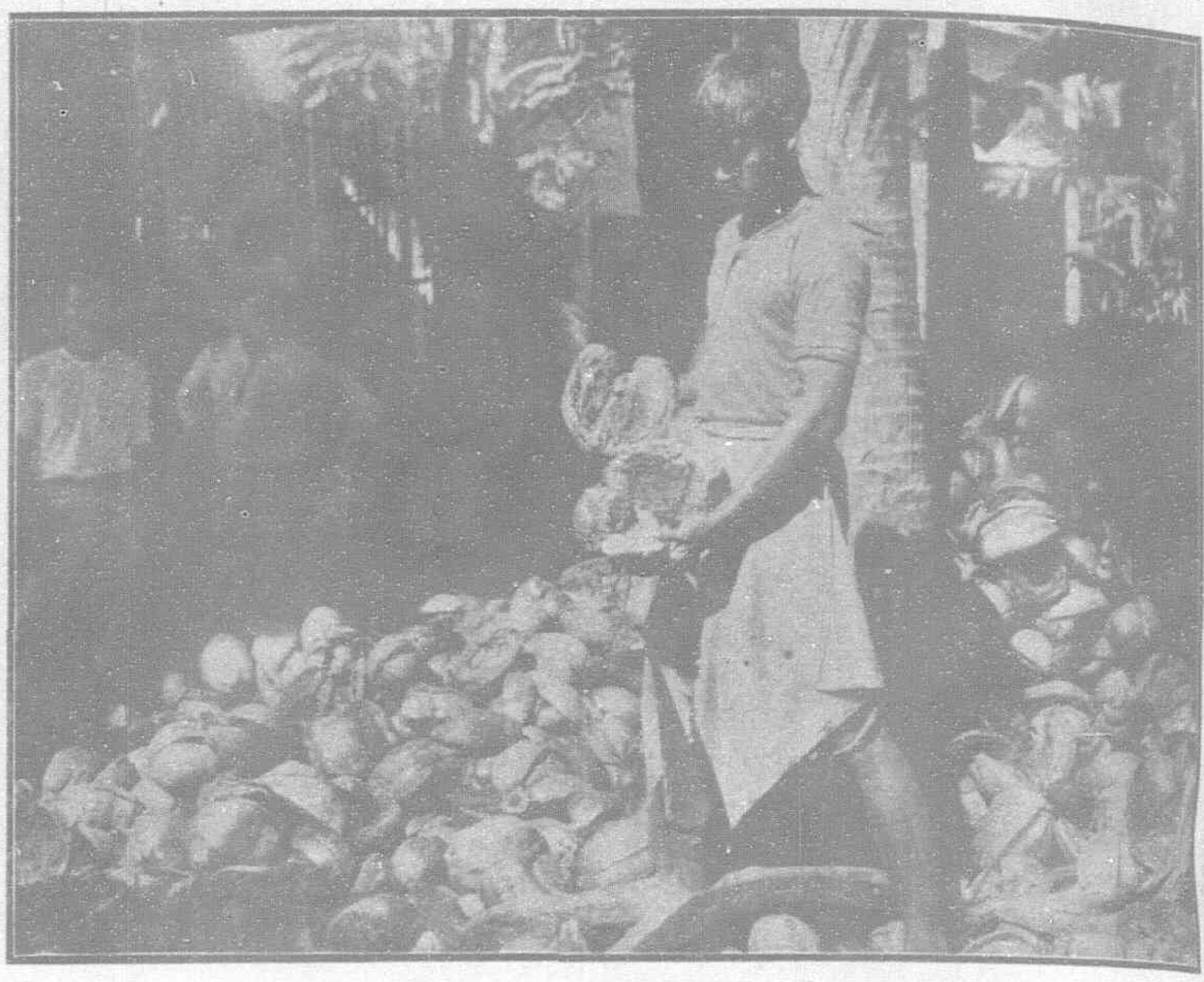
Sago palms, *Metroxylon sagu* Rottb., are common along the rivers and furnish a wholesome food.

It is but natural that abacá and cocoa-nuts should claim the attention above all other crops in Davao, and the province is unquestionably destined to become a country of large plantation ventures. Indeed, such large fortunes (for the Philippines) have been made in land speculation and abacá within such short a time that except cocoa-nuts, cattle and to a limited extent rubber, other crops and business ventures seem to have been lost sight of.



Dragging logs out of the Philippine forests by man-power. These methods are rapidly yielding to modern machinery

Davao Copra Industry, Sun-drying Copra



Stripping Husks from Cocoa-nuts

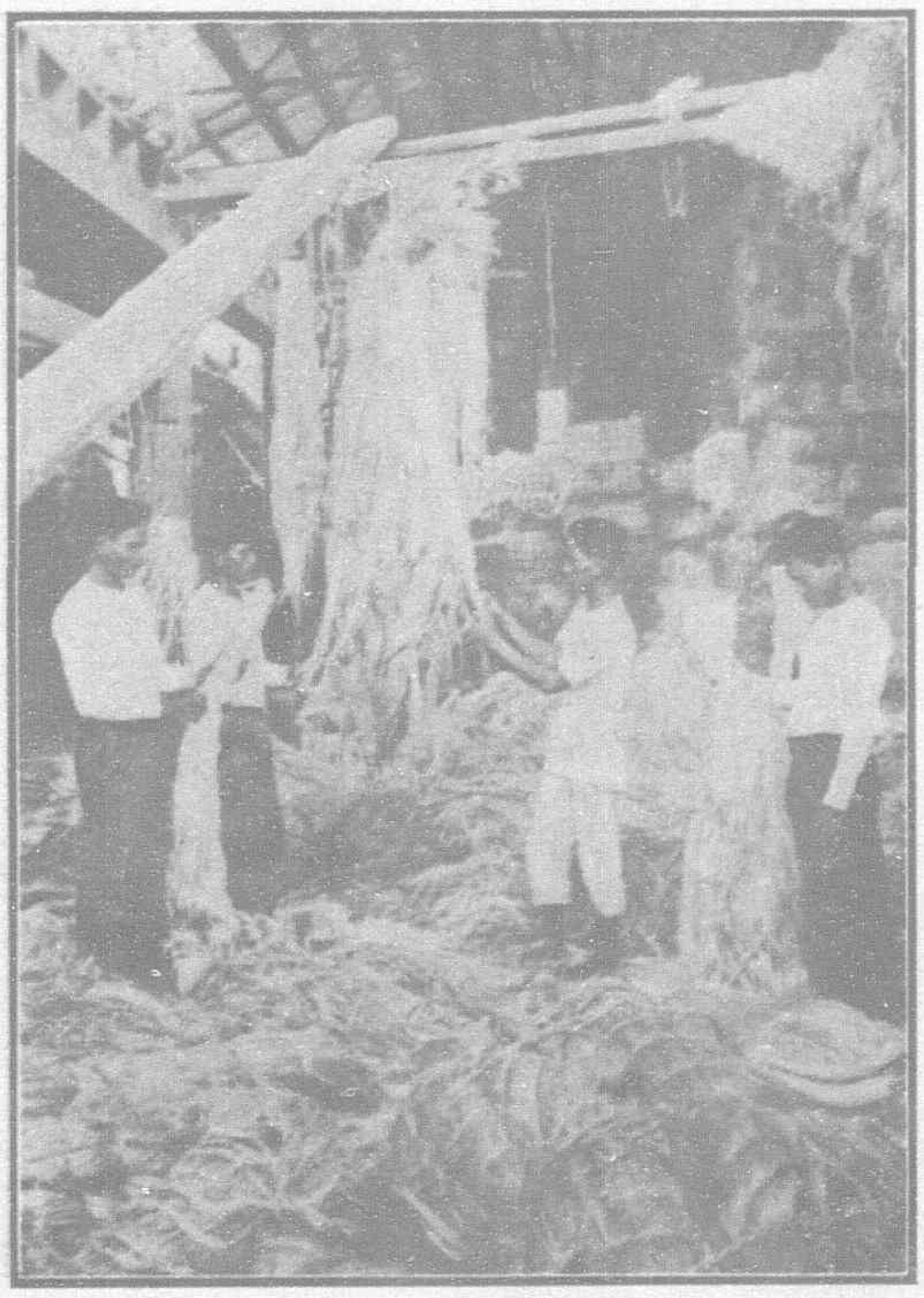
Plantations

The rapid progress of the agricultural development of Davao may be surmised from the fact that whereas in 1917 69 corporations were engaged in agriculture on a fairly large scale, this number increased to 127 in 1918. Of these 82 were organized by Japanese, 20 by Americans and 19 by Filipinos.

Among these plantations those operated by the Ohta Development Company in Talomo and Mintal are the largest and are exceptionally well-organized and managed. In Mintal this company has installed an irrigation system including three miles of main canals and 70 miles of laterals. Talomo is the centre of administration of this company where it has a private wharf and large bodegas. A large, airy modern hospital of light material has been erected in Mintal and all buildings are lighted with electricity from a small hydro-electric plant at Mintal where ice is also manufactured for the needs of the plantations. The plantations, which consist of abacá and cocoa-nuts, are well managed and in excellent condition. Altogether, considering area, its general appointment and management and the excellent condition of the plantations, this enterprise reflects the greatest credit on its organizers and administrators and is well worth visiting by prospective planters who wish to see a model abacá and cocoa-nut plantation managed in line with the most advanced ideas in tropical agriculture.

The Culaman Plantation Company at Malita also has a large plantation of abacá and cocoa-nuts in excellent condition.

Among the many other plantations that have come into existence and are well established the following are especially worthy of notice: The Piso Plantation Company at Piso on the west coast of the gulf. The Madaum Plantation Company at Madaum, at the head of the gulf. The Moro Improvement and Trading Company at Tagnanan, the Gulf Plantation Company at Pantukan, and the Southern Cross Plantation Company at Pangasinan; all of which are located on the west coast of the gulf above Mapanga Bay. The Mindanao Plantation Company at Digos; the Padada Plantation Company at Padada; the Cumassie Plantation at Cumassie, the Basiaon Plantation Company at Basiaon Bay; the Lacaron Plantation Company at Lacaron and the Lais Development Company, Lais, are all located on the east coast of the gulf south of the town of Davao. These are but a few of the more prominent agricultural ventures in the province.



Davao's Fine Hemp. Sorting Abaca and Tying in Hands of Proper Size

Nearly all the plantations in Davao are devoted to abacá or this is the principal crop, though cocoa-nuts are now being planted to an increasingly greater extent, and the indications are that very considerable areas now in abacá will be given over to cocoa-nuts. The violent fluctuations in the market price of abacà fiber coupled with the scarcity of labor is largely responsible for this movement.

At Lais and Malita some castilloa rubber has been planted which is here considered quite promising, largely because the gathering of rubber is simple and can be performed by untrained labor. A small number of para rubber trees have also been set out. Certainly the soil and climate appear to be very favorable foı the growth of hevea. Robusta coffee has been planted at Lais and found very successful but there are no large plantations in the province. Cattle are raised very successfully in connection with some plantations devoted to cocoa-nuts, especially near Mati.

Small areas have also been planted to lumbang or biao, *aleuirtes moluccana*, for nut production by some planters, but it is very doubtful whether this crop will prove as profitable as the cocoa-nuts, abacá, rubber and coffee, to which the province is well adapted.

Resources and Products other than Agricultural

The vast forests of Davao contain much the same timber trees that are found in the forests in other parts of the Philippines.

As yet there are no saw mills to utilize the forest resources of the province.

Lumbang nuts are collected and marketed to a considerable extent. Almaciga and rattans are brought from the forest in small quantities. As yet nothing has been done to export tan-bark from the mangrove swamps that are situated on the gulf.

The waters around Davao are rich in fish but the fishing industry is poorly developed.

Sulphur deposits are reliably reported to exist on Mount Apo, but no surveys have been made to determine their extent. There are hot sulphur springs at Point Baños about midway between Malita and Sarangani Channel.

Trade and Communications

When the recent economic development of Davao is considered, coupled with the presence of an exceptionally long coastline, the reasons for the almost total lack of roads is easily perceived. The only first-class road in the province has been constructed from the town of Davao to its shipping point and dock, Santa Ana, a few kilometers away, which road now is being extended to Talomo. But the absence of land transportation is not such a hardship to the inhabitants as one might be lead to believe, considering that nearly all plantations are located on the gulf and have water transportation.

Two wireless stations, one in Davao, the capital, and another in Kuabo, together with telephone lines that extend to all the more important municipalities even on the Pacific coast as far as Kateel, serve as means of communications within the province, and with the outside world.

The inter-island transportation facilities are confined to the steamers *Raritan*, *Fernandez Hermanos*, *Albay*, *Neil*, *MacLeod*, *Yazoo*, *Mindanao* and *Tablas*, of which all but the last make regular trips to Manila. These steamers not only touch at Davao and Mati, the two principal ports, but depending upon the amount of cargo to or from each place, they call at several of the plantations or municipalities in the gulf as well as on the Pacific coast as far as Kateel. These steamers also call at Zamboanga, Dumaguete and Cebu on their way to and from Manila.

Future Development

The two great future industries of Davao are lumbering and agriculture.

As in Agusan and Cotabato, aside from the timber for lumbering great quantities of almaciga and rattan can be gathered in the forest while tanning extracts can be obtained from the mangrove swamps on the gulf.

The phenomenally rapid development of agricultural lands in Davao is a prophecy of the future, and this may be expected to proceed at a greatly accelerated pace. Here a word as to the development of the past may not be out of place. The progress of Davao during the last five years undeniably has been more rapid than that of any other province in the Philippines. Many (for the Philippines) big corporations have been organized and have set out plantations of abacá and cocoa-nuts. There has been a great stampede for plantation sites, and an impression has recently gained headway that the public land in Davao was fast becoming exhausted. This is not true. How erroneous this belief is may be seen by a glance at the figures on the first page of the within article, where it will be noted that less than 2 per cent. of the lands of the province are claimed for agricultural crops. It is a fact, however, that the agricultural lands near the coast are rapidly being occupied and since there are practically no roads into the interior of the province, planters away from the coast naturally are at a great disadvantage. In fact large areas of the most fertile lands in the province away from the coast are practically inaccessible to planters who would unquestionably open up the lands if the communications with the coast was established. This brings to the fore the future transportation problem of Davao.

The long coastline will permit extensive employment of water transportation on the gulf by small craft, for which there is good anchorage at many points. Good roads from these minor "ports of call" into the interior would do much to bring several of the inland districts within the region where agricultural development is feasible, but for the opening up of the great agricultural district in northern Davao and the establishment of communications with the neighboring provinces, railroads are imperative. With a view of serving the agricultural interests of Davao a harbor more centrally located would have been desirable, but all other advantages are so one-sidedly possessed by Malalag Bay in contrast to other points that one may expect it to become the principal shipping port in Davao.

A railway, terminating at Malalag (one branch turning westward and crossing the range of mountains would enter the Cotabato Valley), should run northward through the rich valleys of Padada, Digos and Santa Cruz in succession, then penetrate the Guianga Plain to turn in a northeasterly direction until it entered the Agusan Valley territory to connect with the railroad from Nasipit. For an outlet to the sea in the northern part of the Davao Gulf, Tagum would probably be the most desirable point, though low and swampy. A third roadstead at Mati on the Pacific coast will probably be established eventually for a branch line penetrating the interior of the peninsula to the north of this town.

The quality of the soil and the rainfall indicate that large areas of land in Davao are well adapted to para rubber. It is true that the earliest attempts to grow para rubber in Davao failed, but this would appear to have been due to faulty seeds and plants, and to inexperience in handling rubber, for later plantings have done well. Also, one may expect para rubber in time to become one of the principal products of Davao. Notwithstanding the progress made by castilloa in Davao, in the light of the experience with this rubber in all other regions where it has been tried, it cannot be recommended as a plantation crop where para rubber will succeed.

While Arabian coffee is not recommendable anywhere in Davao, there is every reason to believe that the new blight resistant coffees would prove highly successful. More particularly on the Guianga plain tea culture on a large scale would appear feasible.

On some of the lighter soils tobacco of good quality might be produced. Other annual crops adapted to this regions are jute and roselle for fiber. Small quantities of anabo fiber are already produced from a native plant, *abroma augusta*, and it is by no means impossible that this might become an important agricultural crop, for the fiber is of good quality and the plant is of rapid growth and easily grown. Cassava starch in large quantities might be produced. The production of the annual crops is largely a question of securing enough labor to handle them.

Native Vegetation on the Shore of Malalag Bay, Davao

The food plants grown in other parts of the Philippines succeed well in Davao and with the proper organization of its agricultural industries the province could be self-supporting so far as foodstuffs are concerned.

The Far Eastern Review

A Monthly Review of Far Eastern Trade, Finance and
Engineering, Dedicated to the Industrial Development
and advancement of Trade in Far Eastern Countries

ENGINEERING FINANCE COMMERCE

5 JINKEE ROAD, SHANGHAI, CHINA

Telegraphic Address: Farview, Shanghai

SHANGHAI, MAY, 1921.

Lest we Forget!

> "It wants more courage to make peace than to carry on a war. *People who demand war and criticize peace are generally weak people who have never fought.*"
>
> ELIHU ROOT, the foremost American statesman of our time.

Balaam's Pets

"GOOD Americans have plenty of cause to regret any asininity expressed in the form of unnecessary anti-Japanese sentiment. It usually comes from those who, lost in a dense jungle of prejudice, throw back their heads to the skies and give forth ill-considered war whoops.

We have no intention of devoting these pages to an attempt to make those who happen to dislike the Japanese find a sudden affection for them. To be rabid as a hater of Japan is to suffer from a disease not easily cured. It is a disease which will keep out of the intelligence of its victim any plain realization of facts, such as the fact that Japan is the only self-governing country within a three-thousand-mile radius of her own boundaries, and is menaced by the disruption around her, upon the one hand, and by the possibility of Occidental occupation of naval and military strongholds, on the other hand.

We refuse to doctor the disease and address ourselves only to Americans who are willing to face facts and to see that, whether we wish it or not, destiny and geography have made Japan a dominant influence in Asia, just as Great Britain is to continue a dominant influence in Europe, and we a dominant influence in the Americas. We address ourselves to those who are willing to realize that there are, roughly, two groups in the internal politics of Japan. *One of these groups is commercially peaceable, desires no conquest of territory, and seeks to co-operate with America.* The other group is bureaucratic, military, and seeks to retain its political power by appealing to its constituency on the basis of jingo patriotism. *Americans who are willing to see these two facts will have to conclude that it is quite worth our while to remain friendly with Japan, and to co-operate with the kind of Japanese who sympathize with our ideals and earn our sympathy with their ideals.*"

No gentle reader, this was not written by the editor of THE FAR EASTERN REVIEW. We culled it from a mass of American editorials expressing very much the same views, and reprint it as one of the most forceful expressions of opinion from the editor of *Collier's Weekly* noted for his Americanism and good, common, horse-sense. His diagnosis is right. To be a rabid hater of Japan is to suffer from a disease not easily cured, and while good Americans at home have plenty of cause to regret any asininity expressed in the form of unnecessary anti-Japanese sentiment, here in China this is reversed, and the "good" Americans who have arrogated to themselves a monopoly of patriotism, insist that the elongated and distinctive feature of Balaam's pet is a characteristic of the unpatriotic American who refuses to fall in behind the procession and yap for war with Japan.

* * *

The Significance of Copper Coinage

IT is not difficult to picture the chagrin in which a farmer has parted with more coppers than he had expected when he set out to purchase that ten yards of grey shirting made possible by a previous disposal of his ten catties of beans. To his surprise his sale of beans has netted him an extra ten coppers but now these ten coppers and more besides have been necessary in order to secure the cloth. His annoyance comes not from the reason. Psychologically imperfect, the register in his mind of a seeming injustice has aroused his indignation. There has been no attempt to understand the why and wherefore, and he returns to his village from the city market place firm in his mind that a wrong has been imposed. Mrs. Farmer and the Farmer children will be the sufferers when next a purchase is necessary. On his already crowded field more beans will have to be grown. On his and his family's already underclad backs, less clothes will have to be worn. There had been no such infliction in his grandfather's day. Peace and plenty made the days in which he had lived days of contentment. And now. . .

Adjustment always follows abuse, whether in slow order or swift. Recognition that China's copper coinage has become a victim to the malpractices of usurers is slowly opening up an avenue which will eventually take in these pirates for a gauntlet running. It is inevitable. What must happen in the meantime are factors in a situation which demands an aggressive handling of the matter. Depreciation in the value of copper coins must reflect seriously upon the buying power of the Chinese merchant, for copper is the trade medium of the masses, and their ability to buy marks the buying capacity of the city middleman. Thus will be added, or is already added, one more instrument of trade incumbrance to the many already existent. Hard indeed is the lot of the foreign trader in these parts. If he and the many Chinese who are to benefit by a legitimate and less difficult system of trade routine wish to relieve themselves of the protruding nail within their shoe they must take an active part in hammering it down. We commend to their attention an article from the pen of Mr. Donald McColl, of the Shanghai Tramways, which is printed elsewhere in this number. The question is dealt with in some detail and will no doubt assist in any movement which may be inaugurated to eliminate the evil.

* * *

Europe Supplying Own Railway Needs

THE European manufacturers of railway materials are now able to supply their own requirements and are fast getting to a point where they will not be dependent upon American credit. So says Mr. W. H. Woodin, president of the American Car & Foundry Company, in the *Wall Street Journal.*

"It is pitiable almost to see ourselves in the position to lend money, and to hear some bankers decry it as a fault in other nations that they want to borrow. Instead of wringing their hands when they hear that China wants money, or that Chili wants money, they ought to be overjoyed. There are billions of dollars in the United States that should go abroad in the next few years. The position that England occupies in world finance was brought about by her ability to lend money, and we ought to follow the British example if we want to obtain the same measure of success. *Lending money* is not a matter of charity, but a matter of good business.*

"We must abandon any idea of doing an export business in Europe on anything but the most inconsiderable scale," he said. "Take American Car & Foundry Co. as an example. Europe can build her own locomotives, freight and passenger cars. Immediately after the armistice it looked as if there might be a demand for American equipment for Europe's railroads, because it appeared that Europe could not produce them and that she might need the credit we could extend. Now it is certain that Europe can produce her equipment and she is fast getting to a point where she will not be dependent on American credit.

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* The italics are ours.—Ed.

"Russia is the only exception, but it seems certain that Russia offers no field for the export of American car equipment because by the time Russia is re-established the Germans will be in position to beat us in the Russian market.

"The main field of activity for the American car and foundry company for future as in the past, will be the domestic field, and there is plenty of room for expansion in that direction. That does not mean that we will not proceed with normal development of certain foreign business, particularly in Mexico, Central and South America and China. These latter countries furnish a big field and they will not be neglected."

* * *

JUST PUTTERING

"The Peace Negotiations"

> **"I feel as if we, the commissioners, were like a lot of skilled workmen who are ordered to build a house. We have the materials and tools but there are no plans and specifications and no master workman in charge of the construction. We putter around in an aimless sort of way and get nowhere."**

THE veil of secrecy shrouding the peace negotiations has been lifted, in part, by the publication of the personal narrative of Mr. Robert Lansing. The chapters of the book of especial interest to our readers are those dealing with the "Lack of an American Programme" and the "Shantung Settlement." THE FAR EASTERN REVIEW was one of the very few publications to invite attention to the absence of any program on the part of the American delegation. Our delegation went to Paris like a lot of school children chaperoned by the head professor. They had no program, no pilot, only the general principles of the president as loosely outlined in the Fourteen Points and his "subsequent addresses" to serve as a guide. The commissioners or the experts were rarely consulted. If an expert entertained views harmonizing with the president's, he became superfluous; if conflicting, he was no expert. He was a nuisance. Lawyers were held in special abhorrence. The president made this very clear during the conference of January 10, 1919, when he bluntly told Mr. Lansing that he did not intend to have lawyers drafting the treaty of peace. Soldiers, men of action, were the president's pet aversion. Not once during the six months of the conference did the president express a wish to meet the generals of the army of which he was commander-in-chief. He studiously ignored their existence. General Pershing was consulted three times in this period on purely routine military matters. Secretary Lansing and his colleagues, Mr. White and General Bliss, worked in water-tight compartments. They had no communication with the president except through occasional letters, invariably ignored. Most of their information concerning the inside of the negotiations was gleaned from conversations with members of other delegations, from press correspondents, and by sounding the "Silent" House or his assistants, apparently selected for a capacity to keep their mouths hermetically sealed. As we read through the pages of Mr. Lansing's narrative we cannot escape the feeling that our criticisms of the manner in which the negotiations were conducted fell far short of what the actual facts called for.

Mr. Lansing's narrative justifies the attitude of THE FAR EASTERN REVIEW, whose publisher, then in Paris, strongly advocated that the German rights in Shantung be surrendered to the allies in the Peace Treaty, leaving Japan or some other power or powers as trustee, pending the convocation of a separate international convention in which the whole case of China could be presented and her status determined for all time.

Mr. Robert Lansing
Former Secretary of State at Washington

This sensible solution did not, however, harmonize with the set purpose of those determined upon "making an example of Japan." If the American delegation lacked a program in other matters connected with the peace, it held most positive views about the disposition of Shantung. In his narrative, Mr. Lansing correctly sums up the Shantung question from the international legal aspect in the following words:—"In fact any transfer or disposition of rights in Shantung formerly belonging to Germany was a transfer or disposition of rights belonging wholly to China and would deprive that country of a portion of its full sovereignty over the territory affected."

Further on in his narrative, he says, "on the 21st of April Baron Makino and Viscount Chinda called upon me in regard to this question, and I frankly told them that they ought to prove the justice of the Japanese claim, that they had not done it and that I doubted their ability to do so. I found, too, that the president had proposed that the Five Powers act as trustees of the former German rights in Shantung, but that the Japanese delegates had declared that they could not consent to the proposition, which was in the nature of a compromise intended to bridge over the existing situation that, on account of the near approach of the completion of the Treaty, was becoming more and more acute.

"On April 26, the president, at a conference with the American commissioners, showed deep concern over the existing state of the controversy, and asked me to see the Japanese delegates again and endeavor to dissuade them from insisting on their demands and to induce them to consider the international trusteeship proposed. The evening of the same day the two Japanese came by request to my office and conferred with Professor E. T. Williams, the commission's principal adviser on Far Eastern affairs, and with me. After an hour's conversation, Viscount Chinda made it very clear that Japan intended to insist on her 'pound of flesh.' It was apparent both to Mr. Williams and to me that nothing could be done to obtain even, a compromise, though it was on the face favorable to Japan, since it recognized the existence of the German rights, which China claimed were annulled."

Pending the promised Japanese rejoinder to Mr. Lansing's statement that Viscount Chinda and Baron Makino called upon him in person, a statement that has been denied by the Japanese delegates, there is one phase of the Shantung controversy that seems to have been ignored by all historians of the peace. Japan had pledged her word that Kiaochau would be restored to China, and during the course of the peace negotiations her delegates gave an oral promise to the Big Three to the same effect. The mistake of the American and Chinese delegations consisted in refusing to accept the word of Japan as sufficient guaranty that she would fulfill her promises. They insisted that Japan's pledges had been lightly broken in the past, and she should now put them in writing. Her honor was placed in question.

Before leaving Peking, the head of the Chinese delegation, Minister Liu Cheng-hsiang, had agreed to work in co-operation with the Japanese at Paris by adhering to the understandings arrived at between the two governments to settle the Shantung question amicably between them at the proper time. When Minister Liu arrived in Paris, and the above fact leaked out, he was discredited and set aside by the other members of his delegation, who leaned upon America to save them from dealing direct with Japan.

The evidence shows that Japan had paved the way to avoid any controversy over Shantung at the conference, but from the day the American and Chinese delegations arrived at Paris, a set plan was adopted and followed to have the case adjudicated in the Treaty. Had there been at the outset of the negotiations the slightest indication of a desire on the part of the American and Chinese delegations to meet Japan half-way by proposing a separate international convention or committee to take up the Shantung question in a general presentation of China's problem, there is no doubt that Japan would have accepted the opportunity to have the future status of the country definitely determined.

This, however, was opposed to the program of those who wanted to make Japan the scape goat for all of China's woes.

This then is one of the reasons why Japan was constrained to insist upon the recognition of her claims in Shantung, solely to save her face in China and her honor amongst the nations. America has promised independence to the Philippines. Our national honor is involved in the carrying out of that promise. Had the Filipinos at the peace conference demanded the right of "self-determination" and enlisted the sumpathy of the other powers, and, led by Japan, insisted upon a written assurance giving the date when the United States would withdraw from the Islands, we would have accepted it as an unjust interference, and would probably have left the conference somewhat incensed. Its a poor rule that does not work both ways.

This will help to explain why the Japanese commissioners declined to accept a last moment solution based on a temporary transfer of the German rights to the allies in the Treaty, pending the convocation of a general conference. For five months the American and Chinese delegations had rejected a compromise. Only when all hope of winning their point was lost, did they seek one. It was then too late.

The mere fact that such a compromise was proposed by Mr. Lansing is evidence that he was not adverse to such methods in order to save one of his own principles. Mr. Lansing's narrative is an arraignment of the president for sacrificing his ideals and convictions in other matters in order to save the league. He devotes four pages to a very careful analysis of the Shantung question, denying the existence of any German rights at the time of the conference, yet at the last moment, both he and Mr. Williams were apparently quite willing to follow the example of the president and surrender their principles in order to avoid defeat. By the refusal of the Japanese delegates to accept the compromise, the American delegates realized they had lost the battle. It was then that they decided that the president should be told of their attitude, because they were unwilling to have it appear that they in any way approved of acceding to Japan's claims or even of *compromising* them." It was left to General Bliss to "bell the cat." This he did in a letter dated April 29. It was a splendid letter, typical of the soldier-diplomat who wrote it. It seems a great pity that his advice was not solicited earlier in the negotiations. Had he been informed that the administration was compromised to have the *whole* case of China taken up at the conference, and that this sensible program had been set aside, there is little doubt of what his attitude would have been from the outset. Unfortunately, it was too late for even his advice to carry any weight.

The most remarkable part of Mr. Lansing's narrative is where he accuses the Japanese delegates of employing threats to "coerce the arbiters of the Treaty terms by menacing the success of the plan to establish a league of nations—to use an ugly word, it was a species of "blackmail" not unknown to international relations in the past." To this he added, "the Japanese threatened to decline to accept the covenant of the league if their claims to the German rights in Shantung were ignored." There was a great deal of conflicting testimony floating around Paris at that time, especially as to the explanation given to the Chinese to explain their defeat. Now the Japanese delegates deny that they held any conference with Mr. Lansing, and or that they used any undue pressure upon the president to have their claims accepted. Their side of the story has still to be told.

However, let us assume that the Japanese did bring pressure to bear upon the Big Three in order to gain their point. As we read through the narrative of Mr. Lansing and the works of othr reliable historians of the peace, we cannot escape the truth that nearly every nation applied pressure upon the conference to gain its ends. In his chapter on "The Proposed Treaty with France," Mr. Lansing bears witness to the fact that the controlling reason for promising the alliance and negotiating the treaty was the president's conviction *that it was necessary to make this concession to the French in order to secure their support for the covenant* and to check the disposition in certain quarters to make the league of nations essentially a military coalition under a general international staff organized and controlled by the French." *"On the morning of June 28, the same day on which the Treaty of Versailles was signed, the protective treaty with France was signed at the president's residence by M. Clemanceau and M. Pichon for the French republic and by President Wilson and myself for the United States, Mr. Lloyd George and Mr. Balfour signing at the same time a simlar treaty for Great Britain."*

Mr. Lansing does not tell us by what means Mr. Lloyd George induced the president to surrender the second requisite in his Fourteen Points providing for the principle of the "Freedom of the Seas," though other equally or better informed writers, do not hesitate to openly state that its elimination was the first condition to Britain's acceptance of the league. Mr. Lansing does not insinuate that Italy resorted to "blackmail" when her delegation left the conference in a huff over Fiume.

Mr. Lansing, as the American secretary of state and peace commissioner, had no difficulty in surrendering his principles and compromising the nation to come to the armed assistance of France, in order to obtain the adhesion of the latter power to the league, His own testimony is conclusive evidence that this was another last-minute compromise accepted on the very morning that the Versailles treaty was signed. For Great Britain, France, Italy, and other powers to exert pressure upon the president to attain their ends, was eminently proper and justified, even to the extent of overturning the American tradition against entangling alliances. For Japan to insist upon recognition of claims which she pledged to restore to China, became "blackmail." Mr. Lansing is not consistent in his narrative, and in this one statement, provides evidence of the Japanophobia which characterized the Far Eastern diplomacy of the past administration. Mr. Lansing and the president invited certain defeat for America and China over the Shantung question, by rejecting competent advice to have this matter brought up in a general presentation of all of China's troubles. It is difficult at this late date to understand why the president and his secretary of state ignored their promises to the nation to follow this procedure. It was pointed out to the Chinese and American delegations at Paris, that if they were defeated on the Shantung issue, it meant a recognition of the 1915 treaty covering this province, and that this would carry with it recognition of the validity of the entire series of treaties signed as the outcome of the Twenty One Demands. As there was no head, no direction to the American delegation, no cohesion and no program, and the Chinese blindly allowed themselves to be led by sentimental promises, the end was inevitable. China went down to defeat, and faced the cold, hard fact, that acceptance of the Shantung treaty made valid the 1915 series of treaties. It has taken over two years to discover their mistake, and they are now making heroic efforts to have the Twenty One Demands placed before the league of nations as the only way out of the muddle. The experts and advisers who rejected sane advice at the conference, have now adopted this advice as their own, and are striving to win an eleventh-hour victory. There is a moral to the story of Mr. Lansing and the defeat of China at the conference. China had a good case, one that could have been advocated and won had it not been manhandled. It was manifestly impossible to take the Shantung question out of the general problem of China, concentrate fire upon Japan and place the case before a tribunal of three, in which two of the judges were compromised to stand by Japan. China and her advisers have now adopted the other line of action, but with the United States out of the league, the outlook for victory is far from promising. The advisers of China who are now urging that the Shantung question be shelved in order to present the Twenty One Demands before the league, are well aware that within a year, China will invite Japan to get out of Liaotung in 1923, and call upon the United States to support her. America may then be squarely pitted against Japan.

G. B. R.

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The Chihli Construction Corporation

A BIG development company has been launched at Tientsin for the purpose of establishing industries, opening ports and exercising municipal powers in leased areas. It is called the Chihli Construction Corporation, capitalized at $35,000,000, of which, one-fourth is said to have been paid up. From information at hand it would appear to be a joint Sino-American enterprise, though the American interests do not openly appear except in a reference to a gentleman by the name of Smith.

The main purpose of the corporation is the establishment of a modern commercial port somewhere along the sea-coast of Chihli province, with the right to construct harbors, breakwaters, lighthouses, wharves, godowns and other necessary establishments, as well as the power to exercise municipal authority within the lands acquired by lease. The company is to have the right of eminent domain to purchase all public lands within the leased area, lay out and construct roads and streets, operate lighting, drainage, water and other public utilities, erect residences, offices, etc. The scheme provides for a power station at Tangshan or another coal producing district, to furnish electric current to the proposed port and city. The corporation is to have the right to organize a municipal council appointed from the members of the company, with the right of veto in the hands of the chairman, and this carries with it the right of organizing police and other forces for the preservation of public order. In other words, the corporation is to create a modern port and city and have full powers to govern, impose and collect taxes without interference on the part of the Chinese authorities.

The incorporation agreement has been signed by Tsao Jui, the civil governor of Chihli, and it is now awaiting sanction from the department of agriculture and commerce at Peking.

It apparently took some time for the facts to sink into the minds of the Tientsin merchants and property owners, invariably wideawake to oppose any improvement scheme in the north which might deflect trade from the port and undermine the value of vested interests. It was not until some time after publication of the agreement that a meeting was held to petition its cancellation. In this petition the name of a "certain foreigner," Mr. Smith, an American, appears for the first time. The opposition is said to be so strong that the ministry of agriculture and commerce dares not sanction it under present conditions.

It is inevitable that the creation of a new harbor along the Chihli coast which must eventually relegate Tientsin into a tributary port will meet with stubborn opposition not only from powerful Chinese but equally important foreign interests.

The improvement or creation of new ports in China is and always will be a most delicate matter. Yet, as the country is developed by railways, and trade increases, a solution must be found to this problem. Tientsin seems to be the first port to face new conditions, yet the same problem has to be met at Shanghai, where the solution seems to be same, the creation of a new express port somewhere near the Yangtsze Cape connected with Shanghai by railway. Sooner or later, Hongkong also will be called upon to meet the competition of a new port at Canton, within Chinese jurisdiction. Other schemes are on the tapis, which, if carried out, must seriously affect the present standing of older ports.

In view of the present condition of China, it seems deplorable that such huge schemes involving as they do the direct credit of the central Chinese government indirectly through the provincial governments, cannot be brought under the consortium and so eliminate international friction and jealousies. The same rule applies to Shanghai and with greater force to Hongkong. The southern Chinese are most anxious to obtain funds to construct a modern harbor at Whampoa or Canton, so as to be independent of Hongkong. Some day, undoubtedly, this problem will have to be faced, as we never can tell when an enterprising concession hunter will walk away from Canton with the contract in his pocket and move heaven and earth to influence his government to support him in his legal rights to do business with the Chinese authorities direct. It would seem that such schemes fall under the scope of the consortium, where they can be handled without arousing international discord and worse.

* * *

Squeezing the Orange Dry

THE fact that at times agitation is not based or inaugurated through sincerity in belief, makes it dangerous to support a movement in which far reaching effects are visible. Under titles such as "China Sells Eggs while Chinese Starve" and "Food from Starving Mouths," certain newspapers in America are deploring the fact that "Chinese eggs are being dumped on the American market, millions of pounds, forcing a break in prices to the lowest February quotations since before the war," also that there is "No food for China's starving, not even weeds to eat, while Chinese food is selling in the American markets, underselling American food!"

Axe to grind utterances are difficult of seperation from those which arise as a result of careful thought and unbiased decision, for where bias begins and where altruism ends in this world, even the least cynical of humans cannot with certainty point. The law of averages, the law of cause and effect and all the other man made explanations to states and happenings, all give voice to arguments which might easily be quoted in support, or otherwise, of this bone of contention with certain American editors. The two sides to every question make it possible to wear the shoe on either foot. A view, which will coincide with that maintained, no doubt, by the Chinese concerned, is voiced by Dr. Seligman, who, in a public statement, has said: "To ask that a great industry like the Chinese egg export business be stopped because of the famine is simply to transfer a difficulty from one part of China to another. Immense numbers depend on the egg export business for their living. Stop this business, and you have another set of starving people on your hands. What right have we to ask that a certain set of Chinese business men ruin their business for the benefit of others of their countrymen? We have never set the Chinese such an altruistic example. There is a practical side to every question, even to such a tremendous disaster as this famine."

Replying to this, a New York paper states, "After pondering over the Seligman assertion, we come to the conclusion that it does not mean anything. A famine is not a difficulty, it is a calamity, and eggs will relieve it. We are passing the hat around in America to provide food for Chinese who are starving to death. These dying persons are in China, and while they perish, their neighbors send food to this country for the purpose of selling it. Not all the arguments of all the 1,500 professors in Columbia University can convince Americans that this is right. For one thing, the eggs are not needed in America, and they are needed in China."

A Massachussettes paper claims to have discovered the secret of the problem. It says, "On the very day that Chinese eggs at 52 cents a dozen 'broke' the Minneapolis market, Chinese eggs were selling at 25 cents a dozen in China. There's the answer! The starving Chinese lacked the 25 cents. The problem, then, isn't so much a greater production of food in the world, as it is a more equitable distribution of the 'power to buy,' without which individuals starve, and famines sweep over entire countries."

Interest in this vital subject is occassioned in China largely through propinquity, and, as a factor in the problem of Economics, in America. Apart from the many sides of the issue that have already been presented, there is one which stands prominently in the offing, a possibility which looms up larger and larger as each year goes by. It is this. If the huge interests which have established themselves in China for the purpose of scouring the whole country for live stock, poultry and eggs for export to foreign lands continue to secure their government's support in unchecked aggrandisement, thus steadily increasing the cost of living in China and actually endangering the food supply, there will come a time when China will depend entirely on the outside world for her sustenance. There can be no quarrel with vested interests which have an eye to the future, who are concerned with the future of the country in which they are exploiting, and who curtail their activities within reasonable limits in consequence, but when huge and immediate profits, disregard for the welfare of the many, and Octopus-like greed actuate their activities, then there is just cause to condemn, to exercise pressure and to regulate this traffic in foodstuffs from China to the rest of the world. Exports there must be from all countries, foodstuffs included, the balance of industrialism being maintained as a consequence, and it is only when a danger to this balance threatens, the mulcting of a country's riches, her life blood, which the white man's silver wisely distributed makes possible, that the cry of "Halt" should be made. If the white man is imbued with the slightest element of altruism in his dealings with the Chinese let this be a matter in which he can show it. There may come a time when the old patriarch will stir himself to say "If this is what industrialism brings us, we will have none of it" and the cry will echo throughout the land. It is not what we can sell or buy to-day that matters so greatly. Our surplus and wants of to-morrow, a careful setting for their disposal and purchase, and more cordial, more eager the co-operation which we will meet with to-day.

Foretells Trade Improvement in Orient

Prominent Banker's Views

A SLIGHT improvement in business conditions in the Far East, the first rays of promise seen in that part of the world for months, was reported by William N. Enstrom, vice-president of the Irving National Bank, who has just returned from an extended trip in the Orient. In China, Japan and the Philippines, Mr. Enstrom said, bankers and leaders in commercial activities believe that the business trend from now on will be upward. The situation still is far from good, but to some extent merchandise is moving again.

Mr. Enstrom left New York in September. In Japan, he visited the cities of Yokohama, Tokyo, Nagasaki, Osaka, Kobe, Kyoto and Shimonoseki, all centres of manufacturing or trading industry, and thence proceeded to Fusan and Seoul in Korea. From there his itinerary included Mukden in Manchuria; Tientsin, Peking, Nanking, Hankow, Shanghai and Hongkong, in China, and Manila. On the return trip he revisited Hongkong, Shanghai and several cities in Japan.

"When I first reached Japan," Mr. Enstrom said, "business was about as bad as it could be. Bankers and business men were downcast. The depression was felt the more keenly because it followed immediately on the heels of the biggest boom Japan had ever known. Japanese industry and commerce flourished, as we all know, during the war, but the expansion of that period was not to be compared with the boom that began in 1919 and continued until the early part of last year.

"In this period, prices, which had begun to rise during the war, moved still higher. Importers bought heavily abroad. Warehouses became choked and the docks were piled high with goods, while large shipments of other goods were on the way. In the meantime, home production had been boosted up to the top notch. Under domestic and foreign demand, great quantities of goods had been turned out and large stocks had accumulated. Seemingly the possibility of a lessening in the demand had not been taken into consideration.

"Then came a hesitancy in buying, followed by an entire cessation of orders. Japan had a tremendous quantity of merchandise which it had produced or bought at high prices. The banks, sensing trouble, stopped making loans. The merchants could not sell their goods and the manufacturers lost their markets. At one time prices offered for some American goods were less than the actual cost of production in the United States. Merchants had difficulty in meeting their obligations. Some failed and many were embarrassed. A period of absolute trade stagnation followed.

"Many industries had to shut down or curtail production, though not all. The big shipyards and the steel and iron industries, for instance, are occupied chiefly on government work, and were able to continue operation. But many of the textile mills—one of Japan's most important industries—had to close. Unemployment increased and wages fell. A great deal of Japanese shipping was tied up for lack of cargo.

"Now things seem to have 'turned the corner.' When I passed through Japan on the way out, one of the leading merchants in the country told me he had not seen an order for goods in months. When I saw him on my way back he said that queries were being received and some orders. In the meantime, the large stocks of merchandise to some extent were being reduced. Trading was still on a small scale, but was becoming more active.

"Korea, or Chosen as it now is, felt the depression like all other eastern countries, but the interests of Korea are primarily agricultural and her problems, in consequence, comparatively simple. Her foreign trade consists largely of the sale of staple products to Japan and the purchase of manufactured goods from the Japanese in return. There is not a great deal of complicated commercial machinery to get out of order.

"The conditions in China did not differ materially from what I had seen in Japan. The great bulk of China's import business is handled by men of foreign nationalities who distribute their goods through native dealers. The slump caught both the importers and dealers with large stocks of merchandise on their hands. Here the situation was further complicated by the heavy drop in the buying power of silver. This, however, is not the first time that China has experienced a commercial crisis and business men told me that the latest trouble was no worse than others that had occurred. One of the most prominent foreign bankers in China said that in his opinion the crisis had passed and that the future would see a steady, though not rapid, improvement.

"Conditions in the Philippines were aggravated by a currency shortage. Normally the Philippines maintain trade balances in other countries with the money received for their exports, and pay for their foreign purchases from these funds. After the overseas demand for Philippine goods ceased, imports soon wiped out these balances. Shipments continued to arrive and the importers had no medium with which to make payment. The treasurer of the Philippines was authorized to issue bills of exchange on the United States, but the Philippine merchant had to pay for these in Philippine treasury notes. In consequence, heavy inroads were made on the amount of currency in circulation.

"Considerable damage has been done to our commerce in the Orient by a certain type of American trader who invaded the Far East during the war, attracted by the unusual opportunities for profit which had been created. This is particularly true in China where the people, though very friendly to the United States politically, have been disappointed by the methods of these irresponsibles who considered only immediate profit. Other countries have also suffered, though in a lesser degree, as the volume of trade of many of them was greatly restricted during the war, and in the case of Germany was cut off altogether. German manufacturers are now investigating trade opportunities in the Orient. Just before I left Japan, sixty-eight Germans arrived on one steamer at Yokohama to look over the field."

Ambassador Morris

The Democrat Who Followed Roosevelt's Advice and Became Famous

IN the March number of THE FAR EASTERN REVIEW, we invited attention to the deplorable lack of trained American diplomats, and added "if we except Ambassador Morris, who has lived up to the highest traditions of American diplomacy, the nation has not developed one practical Far Eastern statesman to guide it along the right path." We just had to give credit where credit was due. Ambassador Morris stood apart amongst democratic diplomatic appointees, one of the few who had a real grasp on the international political situation and succeeded in preserving friendly relations with Japan at a time when others seemed intent upon precipitating a break. If we had not had Morris at Tokyo to counterbalance Reinsch at Peking, who knows what might have occurred.

We now learn from the *Philadelphia North American* of March 5, the reason why Ambassador Morris made such a distinguished record and preserved the highest traditions of American diplomacy. He sat at the feet of Roosevelt and absorbed the clear, sober thoughts of a practical statesman, when he could get no aid, advice, comfort or direction from President Wilson or the state department.

The story in the *North American* is told by Mr. Thomas Robins of Philadelphia, a trusted friend of Roosevelt, who declined to give the facts out for publication until after March 5.

Mr. Robins says:

"In the summer of 1917, President Wilson sent to the senate the name of Roland S. Morris, a Pennsylvania democrat, for appointment as ambassador to Japan. After Mr. Morris was confirmed by the senate, he spent two weeks in Washington, receiving his instructions and studying our diplomatic organization. The post of representative at Tokio is one which requires not only tact and ability, but a thorough knowledge of our relations with Japan during the present century. At the end of his sojourn in Washington, Mr. Morris came to see me in my office in Philadelphia and told me of certain difficulties which he had encountered in acquiring this indispensable knowledge.

"'There are certain things,' he said, 'which I cannot get in Washington. Nobody knows anything about them. There is only one man who does know and that is Theodore Roosevelt. He has the respect of the Japanese, for he has always been careful to remember their susceptibilities and to respect their national pride. At the same time, he has always been firm in upholding the American position in discussing ticklish questions with them. He knows all the ins and outs of the Japanese intentions and of our side of the case. Can you get me an interview with him ?

"I was not sanguine. Not many days before, Colonel Roosevelt's offer of his own services and those of 175,000 men above draft age had been refused by the administration, in spite of the desire of the allies that they might have the benefit of his personality and enthusiasm in France. I did not see how I could ask him to assist Mr. Wilson's appointee under the circumstances. It would have been a very simple matter for the colonel to decline. He had only to plead an indisposition to interfere in the affairs of the administration. He could have alleged a 'delicacy' in discussing public business now in the hands of a president and secretary of state with whom he had no relations.

"I somewhat reluctantly assented to Mr. Morris' request and wrote to Colonel Roosevelt. I expected to be turned down. By return post I received his reply. He cordially complied with my request. He invited Mr. Morris and myself to dine with him at the Harvard Club, on the night of July 20, 1917. We spent five hours together, he giving his best to my friend, in the public interest.

"He told him everything, beginning with the Japanese-Chinese war and ending with his retirement from office. He advised him about this, he cautioned him about that. He defined exactly the limits within which we could acknowledge Japan's supremacy in the Orient. He unraveled the intricacies of the race question in California. He drew without limit upon his immense stores of diplomatic information, and at the end of the evening, I am sure that Mr. Morris appreciated that he had received a preparation for his arduous post that he could never have hoped to gain from any one else.

"The colonel was not insensible to the humor of the situation. His enjoyment of it was the only requital which he exacted for treatment from the administration, which was as ungenerous as it was ill-judged."

By the Way

IN the editorial under the title "Balaam's Pets" reference was made to the editor of *Collier's Weekly*. Since writing it, news has been received in the Far East that a report is current in New York that Mr. Richard Washburn Child, who is the editor of *Collier's Weekly*, has been selected as United States ambassador to Tokio. In the event that the report is correct a short resumé of Mr. Child's career might be of interest.

Mr. Richard Washburn Child, who is a writer, publicist and lawyer, was born at Worcester, Mass., on August 5th, 1881. He graduated from Harvard University in 1903 and received the degree of LL.B. in 1906. In the same year he was admitted to the bar.

As assistant to Mr. Frank A. Vanderlip, president of the National City Bank of New York, he did good work during the war, volunteering for war finance work for the United States treasury department.

The world knows Mr. Child better as a writer of fascinating fact and fiction articles and stories, many of which have appeared during the past ten years in the *Saturday Evening Post* and other prominent American periodicals. He has occupied the editor's chair of *Collier's Weekly* for about a year succeeding Mr. Mark Sullivan. During the presidental campaign last autumn Mr. Child superintended the pro-Harding publicity.

Shanghai Improvements—Waterworks Extension

THE water supply of the International Settlement of Shanghai is in the hands of the Shanghai Waterworks Company, Ltd., the Company this year completing the fortieth year of its existence, having been registered in London in 1880.

Water was first turned on by the then Viceroy, Li Hung-chang, on June 29, 1883, and up to that time residents in Shanghai had to rely on a supply of water clarified by native alum and delivered in water carts. The Company has always worked under agreement with the Municipal Council, the last having been signed in July 1905, when the Company issued to the Council 975 shares free of cost. Since that date, the Council has substantially increased its holding of shares and the community has, therefore, a considerable interest in the prosperity of the Company.

The Company is controlled by a board of directors in Shanghai; its interests in London being looked after by a committee. The share capital of the Company at its inception was £100,000; the authorized capital at the present time is £1,000,000, of which over £500,000 has been subscribed, in addition to nearly one million taels of debentures.

The Waterworks are situated near the eastern end of the Settlement (Fig. 1), water being taken from the Whangpoo river (which is tidal), settled, filtered and pumped into the distributing system. Shanghai is built on an alluvial plain, a few feet only above water level and as there is no hill available for service reservoirs pressure is maintained by continuous pumping.

The Whangpoo water is very turbid and is, at the works, first admitted by gravity and then by pumping into subsidence tanks with a total capacity of 42 million gallons, where the heavier suspended matter settles. The pumps employed in filling these tanks are four in number. All are centrifugal, two being steam and two electrically-driven, the motors of the latter being each of 300 B.H.P. These pumps were supplied by Messrs. Gwynnes, Ltd., and the Shanghai Dock & Engineering Co., Ltd., the motors being built by the British Westinghouse Co. Experiments are now being made in the use of coagulants, and it is possible that in the future all water will be treated by this process.

Water is decanted from the subsidence tanks through floating draw-off pipes, and is pumped by suction gas and steam-driven centrifugal pumps to a raised service reservoir, whence water flows by gravity to the filters.

These pumps were supplied by Messrs. Gwynnes, Ltd., and the Shanghai Dock & Engineering Co., Ltd., the suction gas engines and plant being constructed by the Campbell Gas Engine Co. and the National Gas Engine Co.

Filtering is on the slow sand system. There are 36 filter beds with a total surface of 570,000 square feet and filtering is downward at an average rate of about 1.5 gallons per square foot per hour. The filter beds are scraped in the usual way by hand, sand being washed in boxes by hand and also by Messrs. Hardy & Padmore's sandwashing machines. The question of employing rapid sand filters in conjunction with a coagulant, and possibly chlorination, is under consideration at the present time. Three additional slow sand beds are now under construction.

From the filters the water passes by gravity to two covered clear water reservoirs,

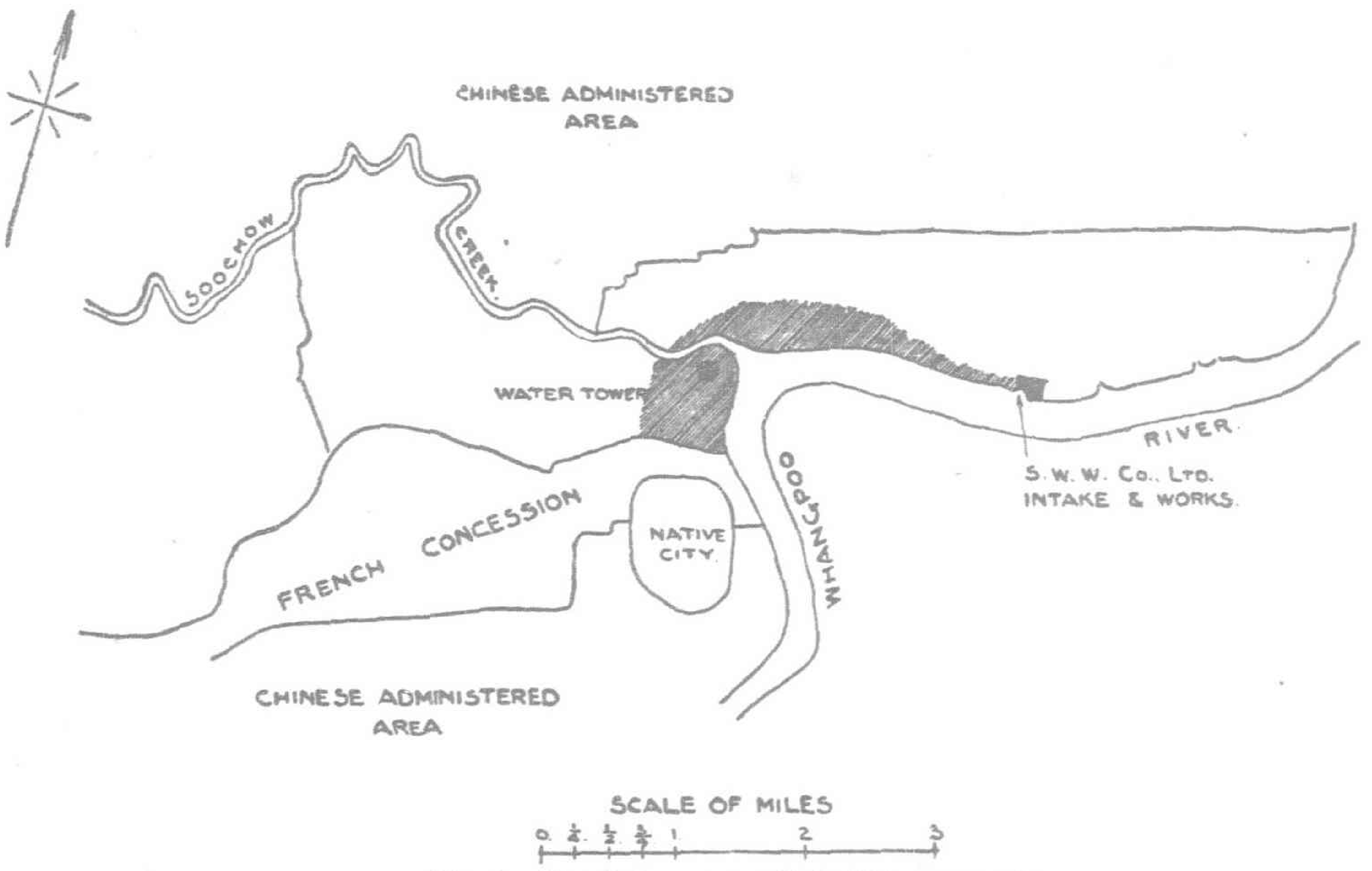
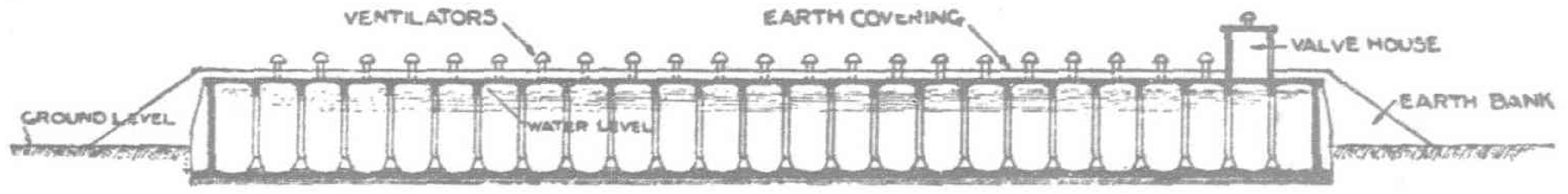


Fig. 1. Showing area supplied thirty years ago.



A SECTION OF ONE OF THE RESERVOIRS SHOWING CONCRETE FLOOR, ROOF & COLUMNS.

SCALE 40 FEET TO 1 INCH

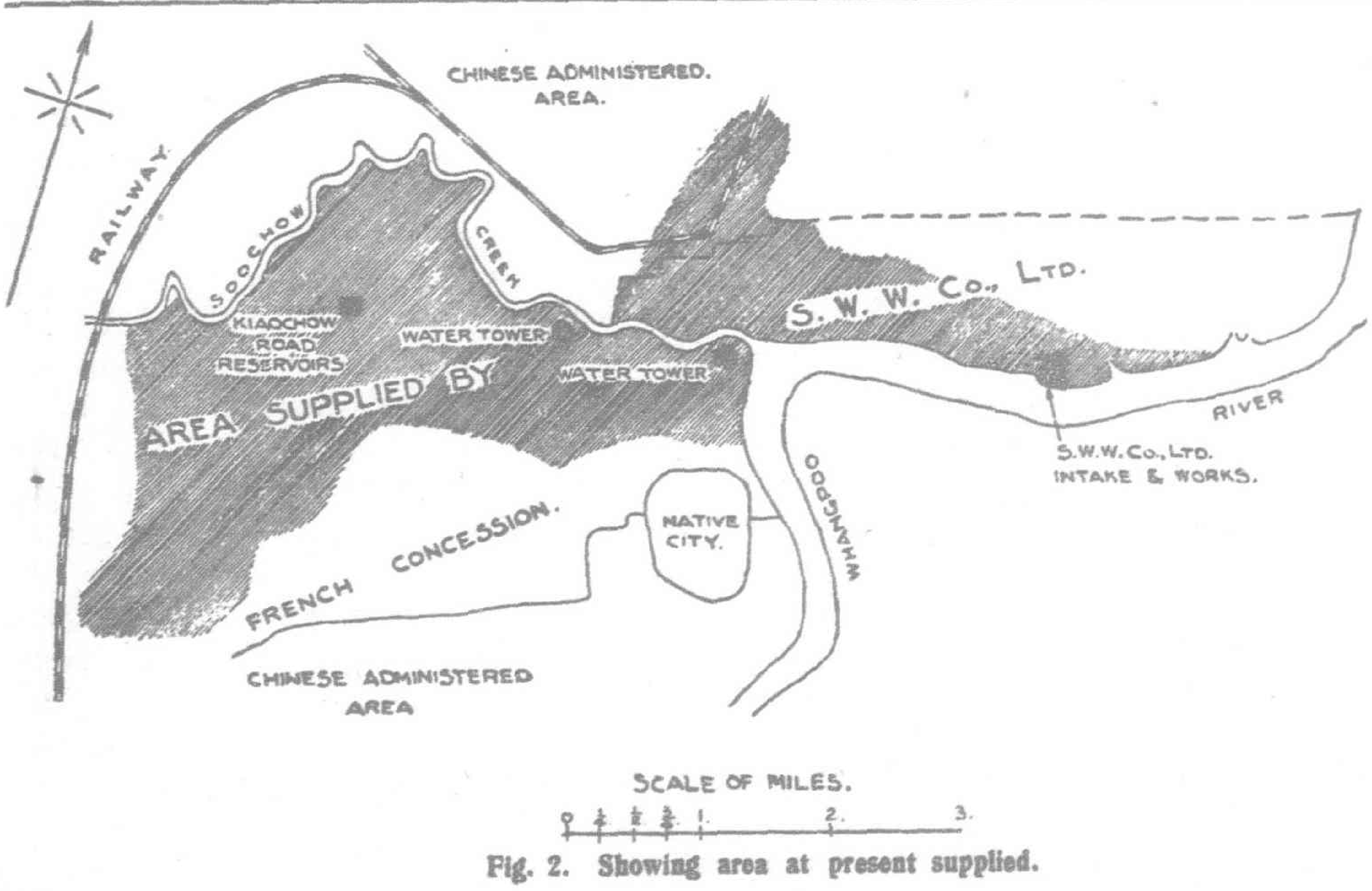
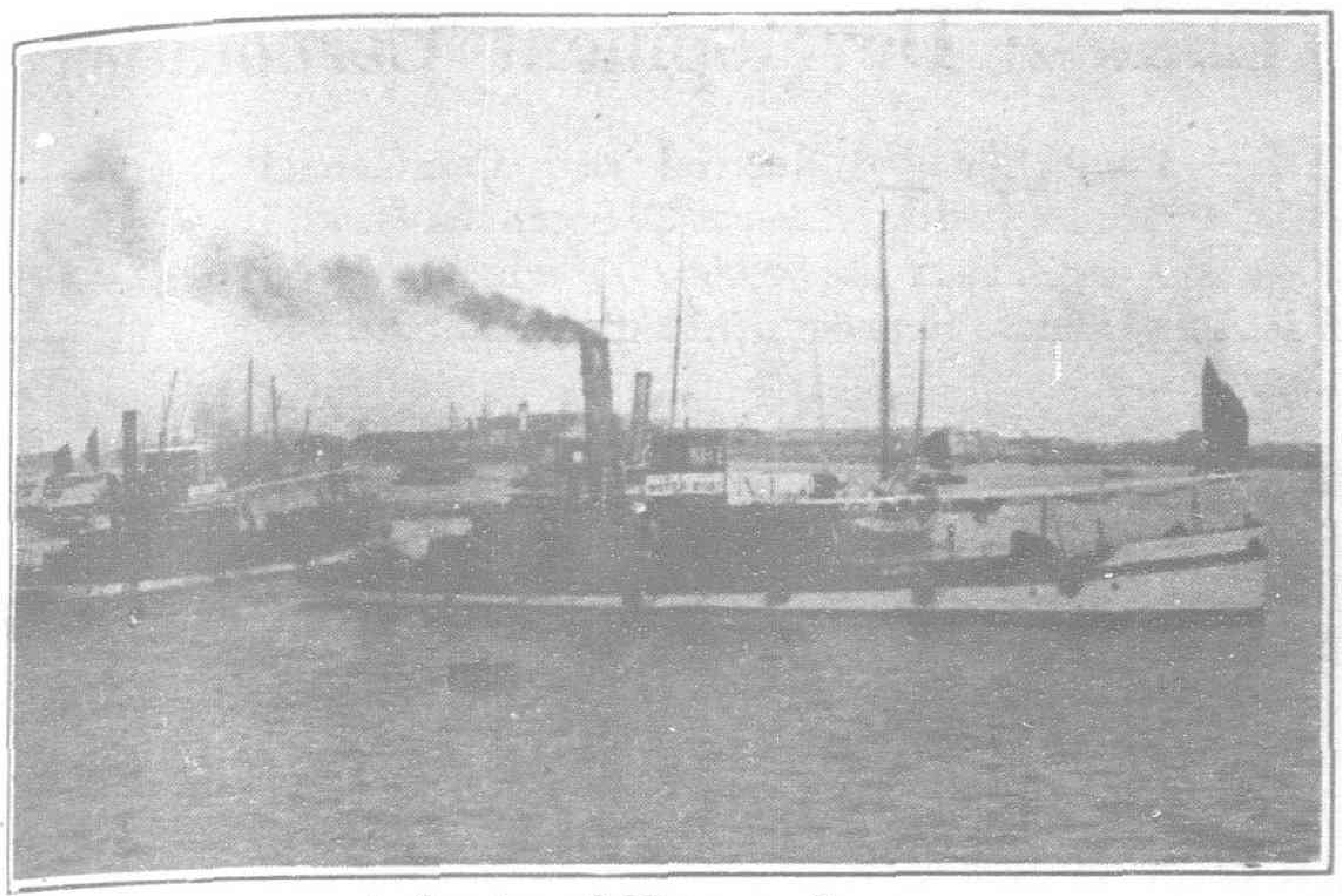


Fig. 2. Showing area at present supplied.



A Carrier of Water to Steamers

and thence flows to the main pump wells. The six main pumps are steam-driven and are, with the exception of one differential pump, of the horizontal compound condensing reciprocating type. These pumps were supplied by Messrs. Hathorn, Davey, Manlove & Alliott, Glenfield & Kennedy and Worthington-Simpson. Contracts have now been placed for two additional pumps, one of the reciprocating type from Messrs. The Worthington Co., of America, the other a high lift centrifugal pump from Messrs. Allen & Sons of Bedford.

Steam is supplied to the main pumping engines by Lancashire boilers working at pressures of 80-lbs. and 120-lbs. per square inch. Steam is superheated and Green's economisers are installed with the newer boilers, which are fed by the underfeed mechanical stokers.

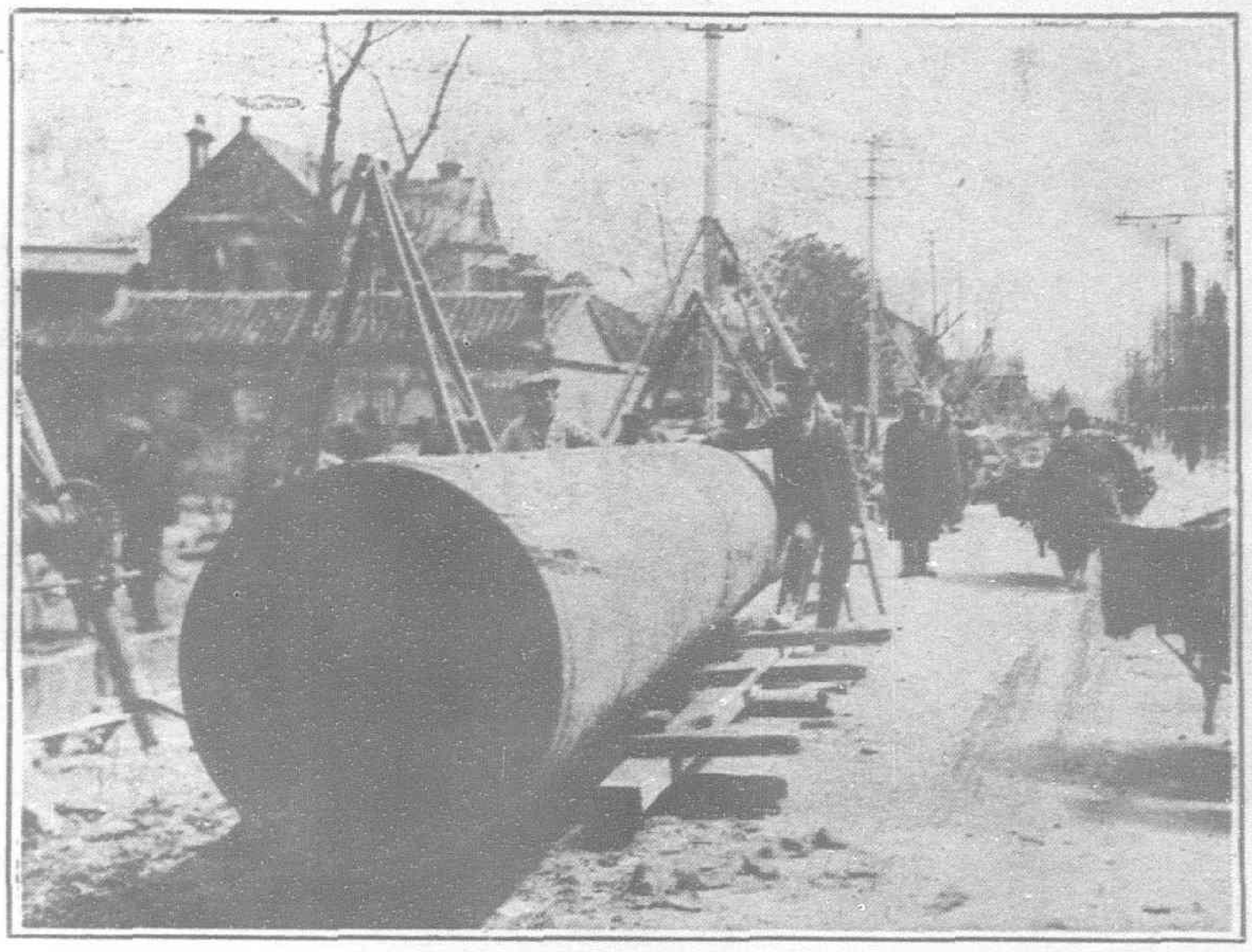
The pumping plant is well maintained, smaller repairs being carried out in the Company's workshops.

Owing to the increase in consumption in the western end of the Settlement, and to reduce the peak load on the pumping and filtration plant during the time of maximum consumption, reservoirs are now being constructed in the western portion of the Settlement. These reservoirs are to be filled at night and the water pumped therefrom by electrically-driven pumps into the system during the period of heavy consumption. They are being built in reinforced concrete throughout.

The Company maintains a laboratory for biological and chemical analyses and research work.

Distribution System

From the pumping station water is pumped into the distribution system through four pumping mains one of 30-in., one of 25-in. and two of 20-in. diameter. These mains, as are all trunk and distributing mains, are of cast-iron, but the Company are now laying steel pipes of 40-in., 33-in. and 36-in. diameter, these are being made by Messrs. Stewarts & Lloyds of Glasgow. The mains, which now have a total length of 112½ miles, are well supplied with valves and hydrants, the latter being now fitted with two 2½-in. delivery outlets and a 4-in. suction connection for the Municipal Fire Brigade's engines.



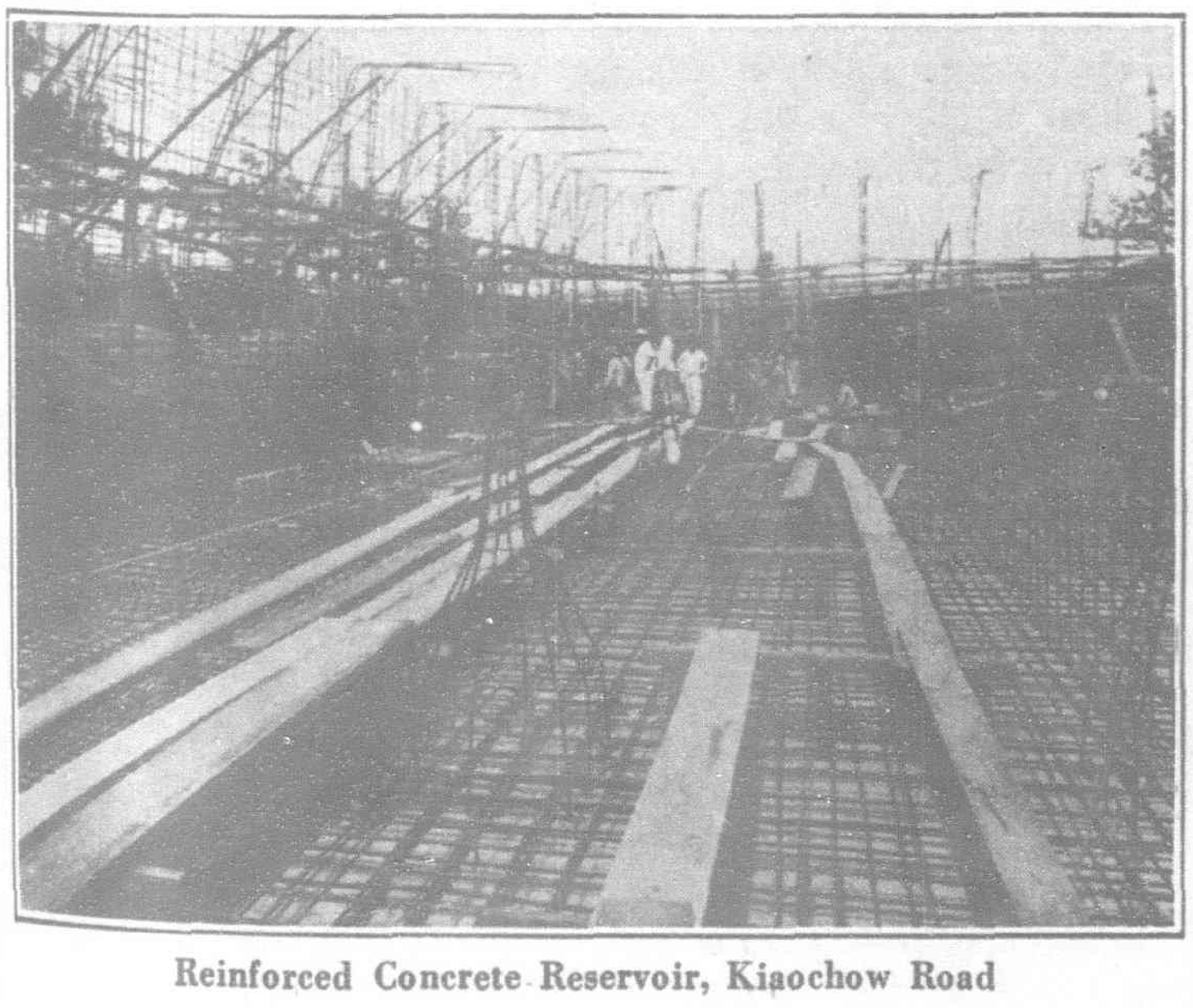
Laying the 40-in. Main

The larger mains are carried over the larger creeks in steel.

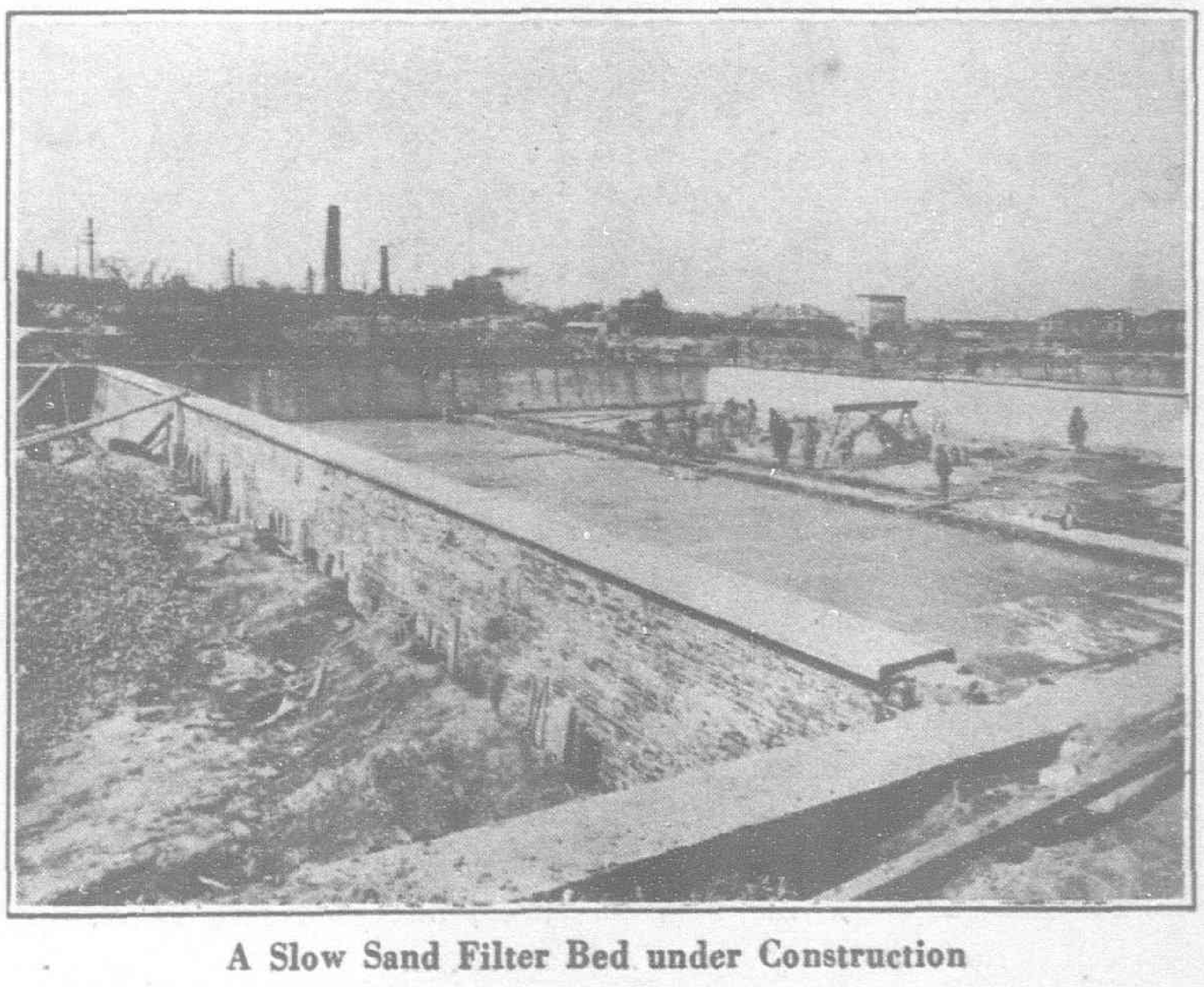
There are two water towers in use, the first, with a height of 100-ft. and a capacity of 100,000 gallons, is situated in the centre of the Settlement and is an exceptionally handsome structure. The second tower has a height of 125-ft., and is situated in the western district.

Water is supplied for domestic purposes at rates varying from five per cent. to two per cent. of the rental: according to the building supplied. Water for industrial purposes is supplied by meter.

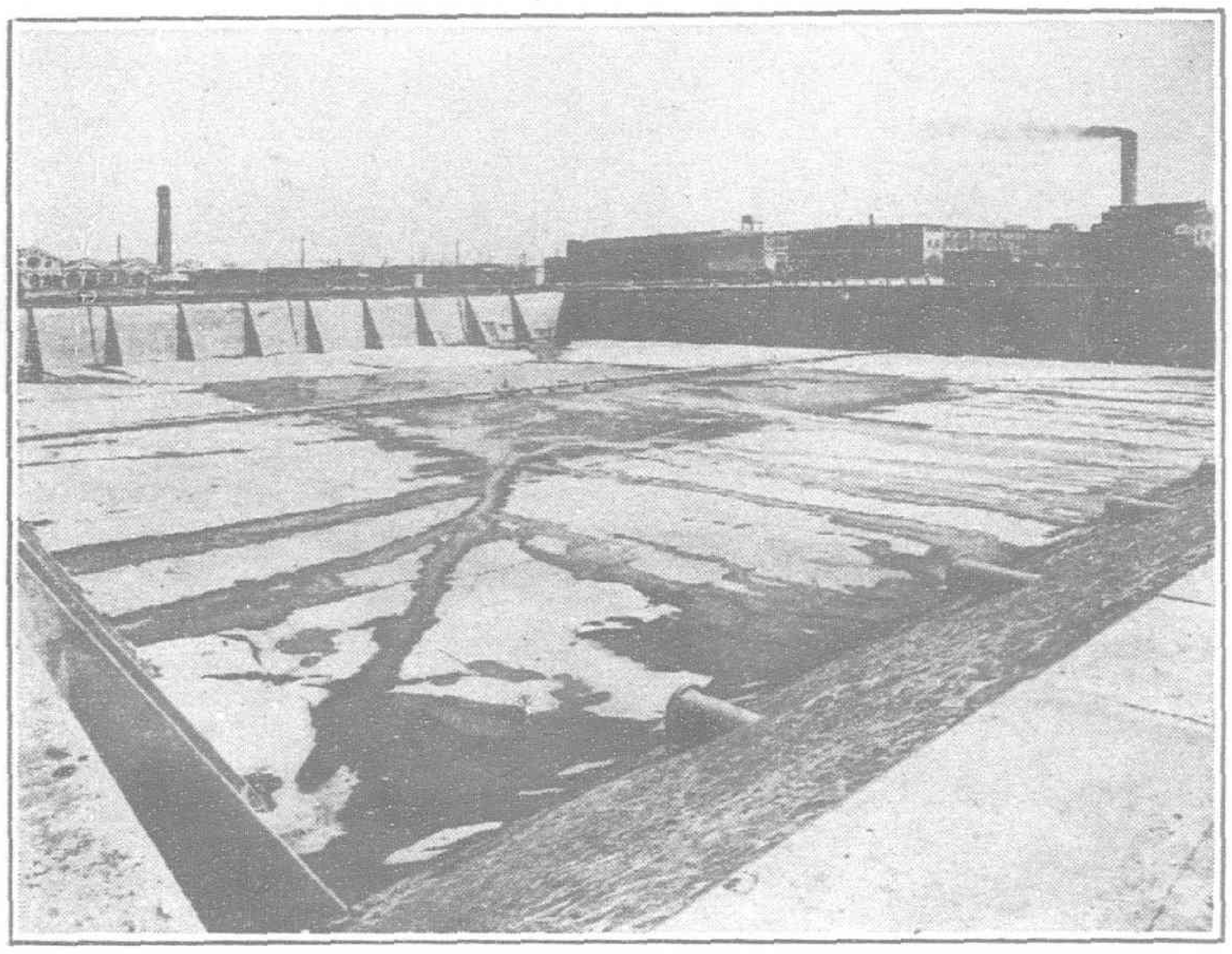
The works were originally designed to supply three million gallons per day. The consumption at the present time has exceeded 23 million gallons per day, the hourly demand being over 1¼ million gallons at times. The Company maintains a well-organized waste detection department. A staff of day inspectors keep a careful watch over fittings and waste, while underground leakage is detected by means of Deacon's meters, which are used at night, this work



Reinforced Concrete Reservoir, Kiaochow Road



A Slow Sand Filter Bed under Construction



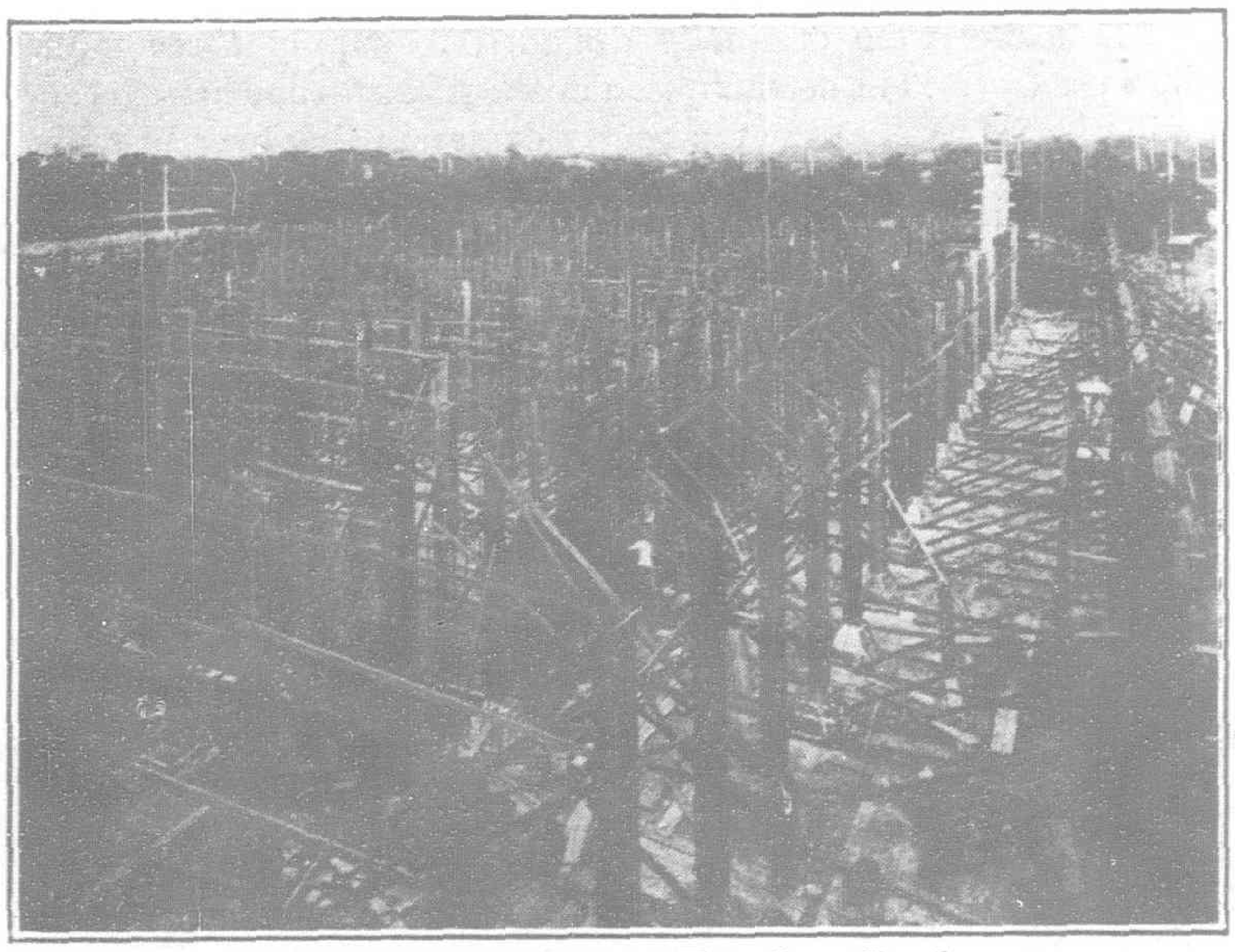
A Settling Tank Emptied for Cleaning

being rendered difficult through the fact that consumption of water in Chinese houses never entirely ceases as in European towns.

The Company maintains a well-equipped fleet of water boats, four being steel steam boats with capacities of from 150 to 75 tons, there is also a steel lighter which can be handled by the Company's launch. These water boats are equipped with steam-driven pumps and compare very favourably with water boats found in European ports.

Fittings Department

When water was first supplied to consumers, the Company found it necessary to undertake the installation of water-fittings, and the department thus formed has now grown till it is in itself a considerable concern, undertaking every description of sanitary work, including fire protection installations, hot water and steam heating. This department maintains a staff of 13 Europeans and employs on an average 200 Chinese. The greater number of large as well as smaller buildings in Shanghai have been fitted up by this department, whose activities are not confined to Shanghai.



Tank Construction at Kiaochow Road

Large stocks are carried, and the godowns contain anything from a tap washer to a 300-gall. per minute fire pump, or a soap dish to a million B.T.U. boiler.

The interests of the Company are well maintained by a European (mainly British) staff of 44 and a native staff often totalling 800. Mr. A. P. Wood, M.I.C.E., Engineer-in-Chief and Secretary of the Company for the last 34 years, has just retired and his position is now filled by Mr. F. B. Pitcairn.

Chinese Development Corporation

THE Fung Sheng Industrial and Commercial Development Corporation, with offices at 35 Szechuen Road, is a new corporation capitalised at $2,000,000 which represents the entry of leading Chinese financiers into modern lines of business hitherto neglected.

The promoters include Chin Yung-peng, the premier; Pan-fu, the vice-minister of finance; Sun Pao-chi, director of the inspectorate-general of customs; Lu Yung-hsiang, tuchun of Chekiang; Fu Siao-en, managing-director of the China Merchants' Steamship Navigation Company; Shen Lien-fang, chairman of the Steam Filatures and Cocoon Merchants' Guild; Sui Meng-ken, managing director of the Peking-Suiyuan Railway; James H. Lee, Dr. Z. T. K. Woo, general superintendent of the Hanyang Works; and E. Y. Edward Sheng are among the chief shareholders.

The original aim was to organize a firm to undertake the development and management of the vast real estate holdings, industrial plants, mines, and stocks and bonds under their ownership or immediate control.

Realizing the opportunity of a general company to undertake construction deal in stocks, bonds, real estate mortgages, insurance, storage, warehousing and industrial financing they threw open the subscription lists and made it a limited stock company. The corporation is affiliated with a group of Chinese banks, capable of taking care of any large project it may undertake.

The managing director, Mr. E. Y. Edward Sheng, is the oldest son of the late Sheng Kung-pao, and assistant general manager of the Han Yeh Ping Iron and Coal Co., Ltd., president of the Commercial Bank of China, president of the Wah Foo Commercial and Savings Bank, superintendent of the Chinese American Bank of Commerce, and is on the directorate of many other large business enterprises.

Mr. Y. S. K. Lu, one of the assistant managers, is a son of Tuchun Lu Yung-hsiang. Mr. James H. Lee, vice-president of the Wah-Foo Commercial and Savings Bank, and president and promoter of a chain of electrical plants in many of the interior cities, is the other assistant manager.

The board of directors of the company consist of Messrs. Chien Nun-shun, Y. S. K. Liu, Pan Fu, Yao Moo-lien, Shen Lien-fong, Sui Meng-kun, Fu Siao-en, James H. Lee and E. Y. Edward Sheng.

"The Mineral Resources of China"

Prize for Best Essay

Mr. Reginald Le Neve Foster has presented the Royal Society for the encouragement of arts, manufactures and commerce with a donation of £140 for the purpose of founding a prize in commemoration of his father, Mr. Peter Le Neve Foster, who was secretary of the society from 1853 to 1879.

The council have decided to offer the prize for a paper on "The Mineral Resources of China."

The prize will consist of a sum of £10 and the society's silver medal.

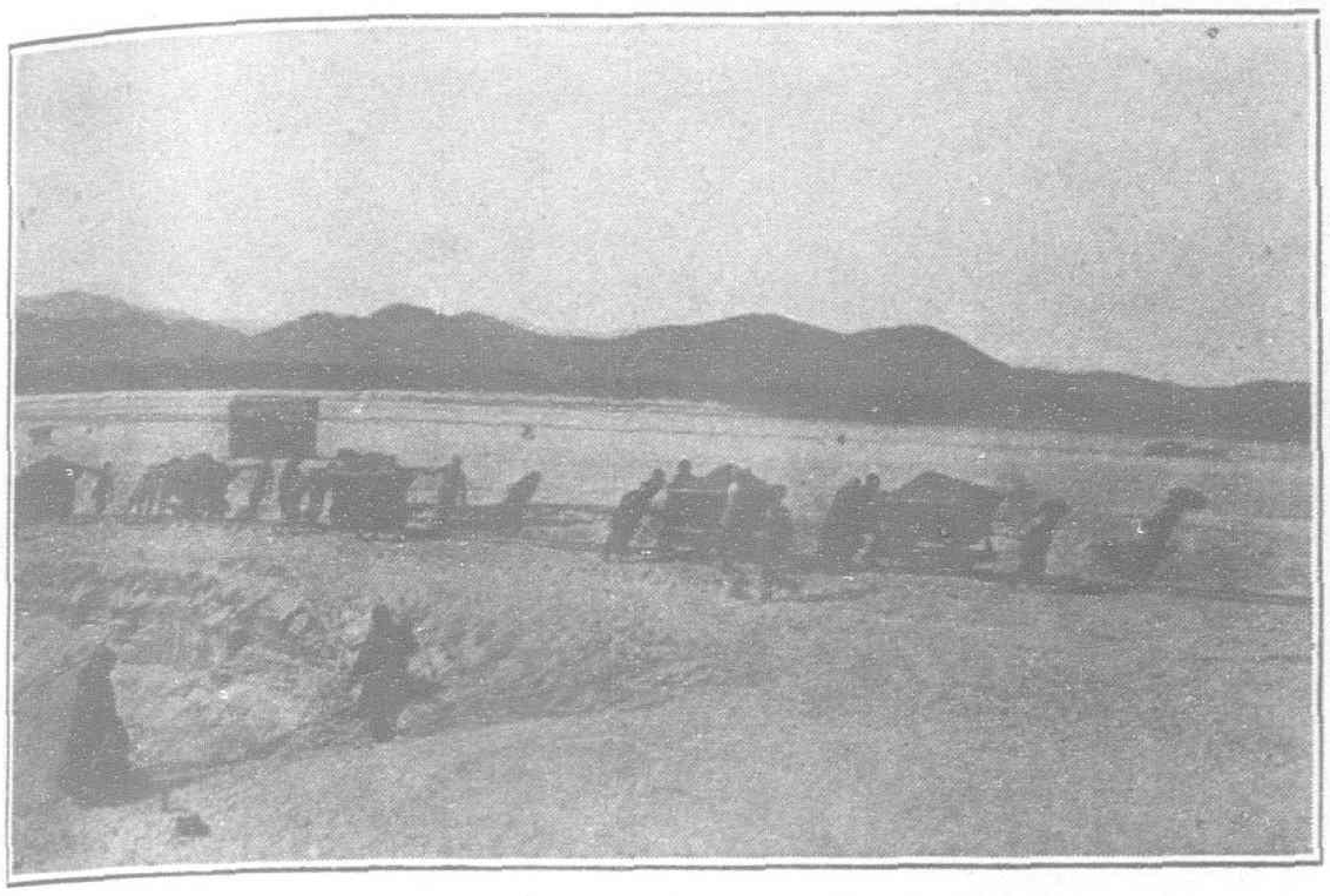
The paper for which the prize is awarded will be read at one of the ordinary meetings of the society.

Intending competitors should send in their papers not later than December 31st, 1921, to the secretary of the Royal Society of Arts, John Street, Adelphi, London, W.C.2.

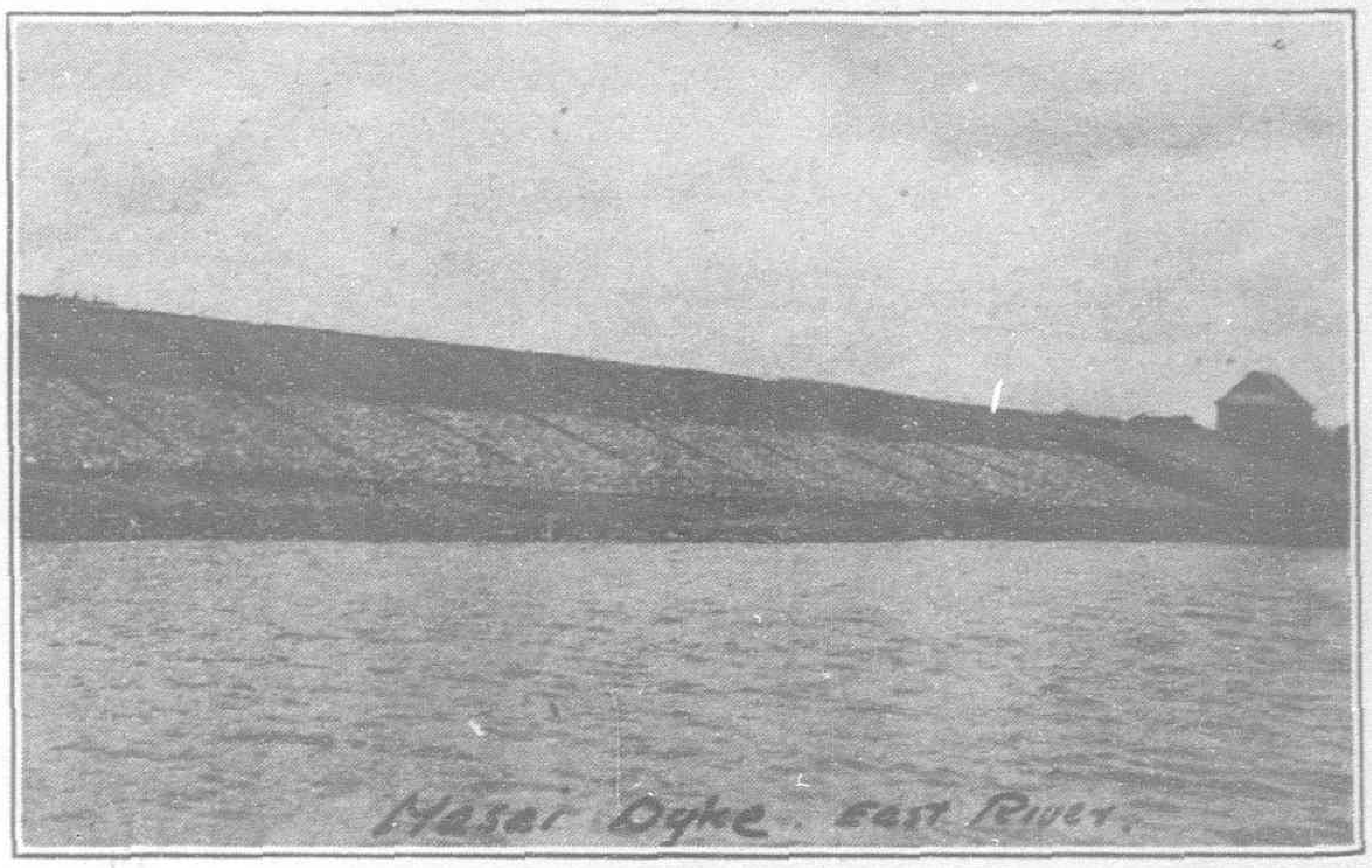
The paper must be in English and type-written. It may be sent in under the author's name, or under a motto, accompanied by a sealed envelope enclosing the name, as preferred.

The judges will be appointed by the council.

The council reserve the right of withholding the prize or of awarding a smaller prize or smaller prizes, if in the opinion of the judges nothing deserving the full award is sent in.



Dyke Construction at Lupao, North River



Masai Dyke, East River

Canton Delta Permutation

First Report of Conservancy Board

THE report, with plans, of the activities of the board of conservancy works at Kwangtung, covering the period September 1st, 1919 to June 30th, 1920, though very belated, contains much information of interest to those having any connections with the part of China dealt with, and the more interesting portions of its contents follow.

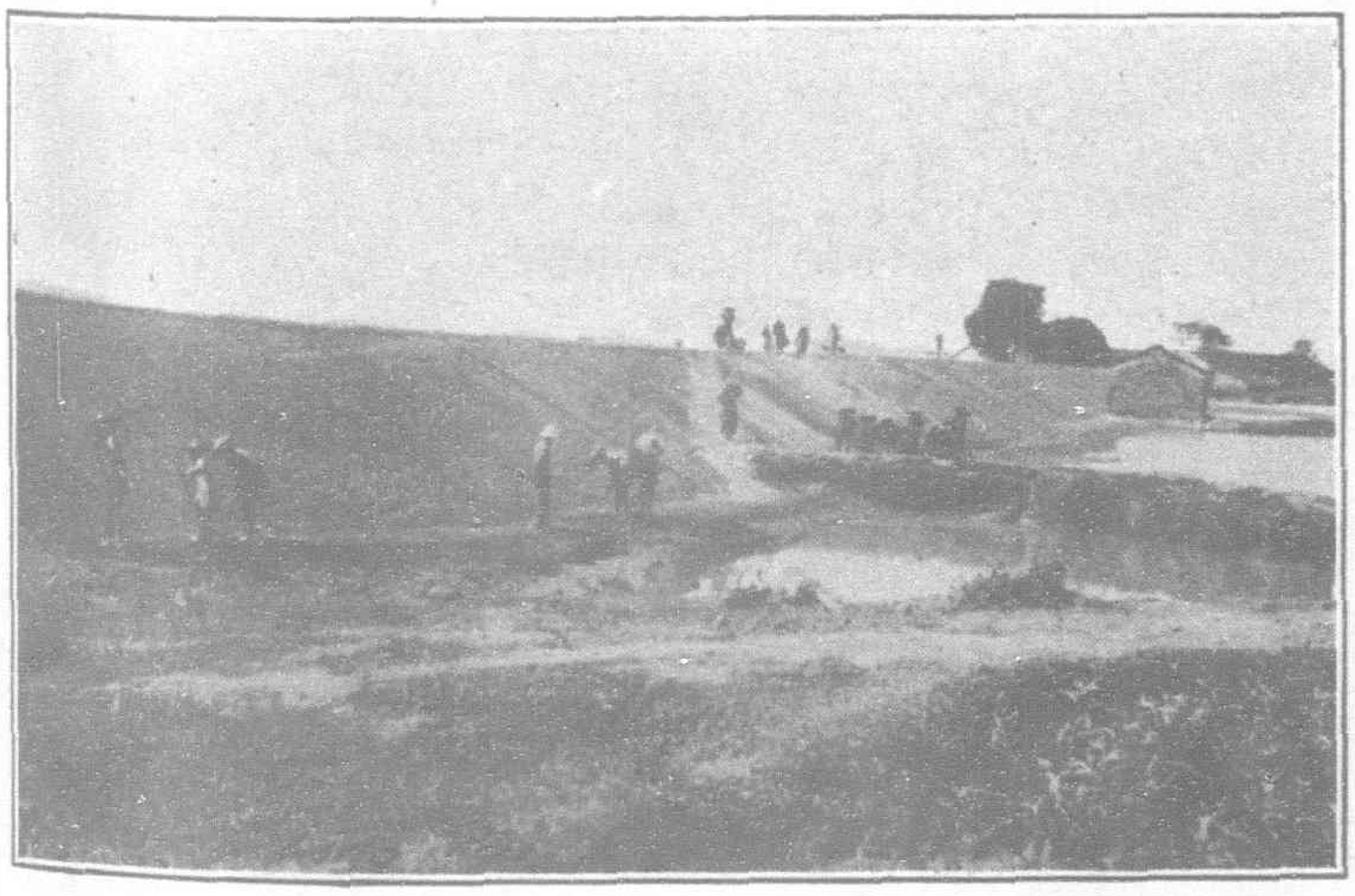
The devastating floods which in June, 1914, visited the basin of the West, the North and the Canton Rivers, and most parts of the Canton delta, brought into existence the board of conservancy works of Kwangtung. By a mandate of December 31st, 1914, the president of the republic appointed the late Admiral Tan Hsia-heng to be director-general of the board, with instructions to investigate the causes of the repeated flooding of vast areas of land, and to report upon the necessary preventive measures to be undertaken. Realizing the necessity of a thorough knowledge of the hydrographical and topographical features of the rivers, without which any attempt to work out a feasible scheme to ameliorate the floods would prove fruitless, the director-general decided to undertake a scientific survey of the rivers. For this purpose a surveying staff was organized, composed of Chinese engineers with a number of students from the military surveying school at Canton, under the leadership of expert foreign engineers. The survey was commenced in June, 1915, the first objective being to investigate the conditions in the West River valley. The following year, in June, these investigations were completed and the results were embodied in a comprehensive report entitled "The West River Survey of 1915."

This report gave a description of the general condition of the river and the present protective works in existence against floods, together with such hydrographic and geographic data as was necessary to enable the engineers to work out a scheme for regulation of the floods.

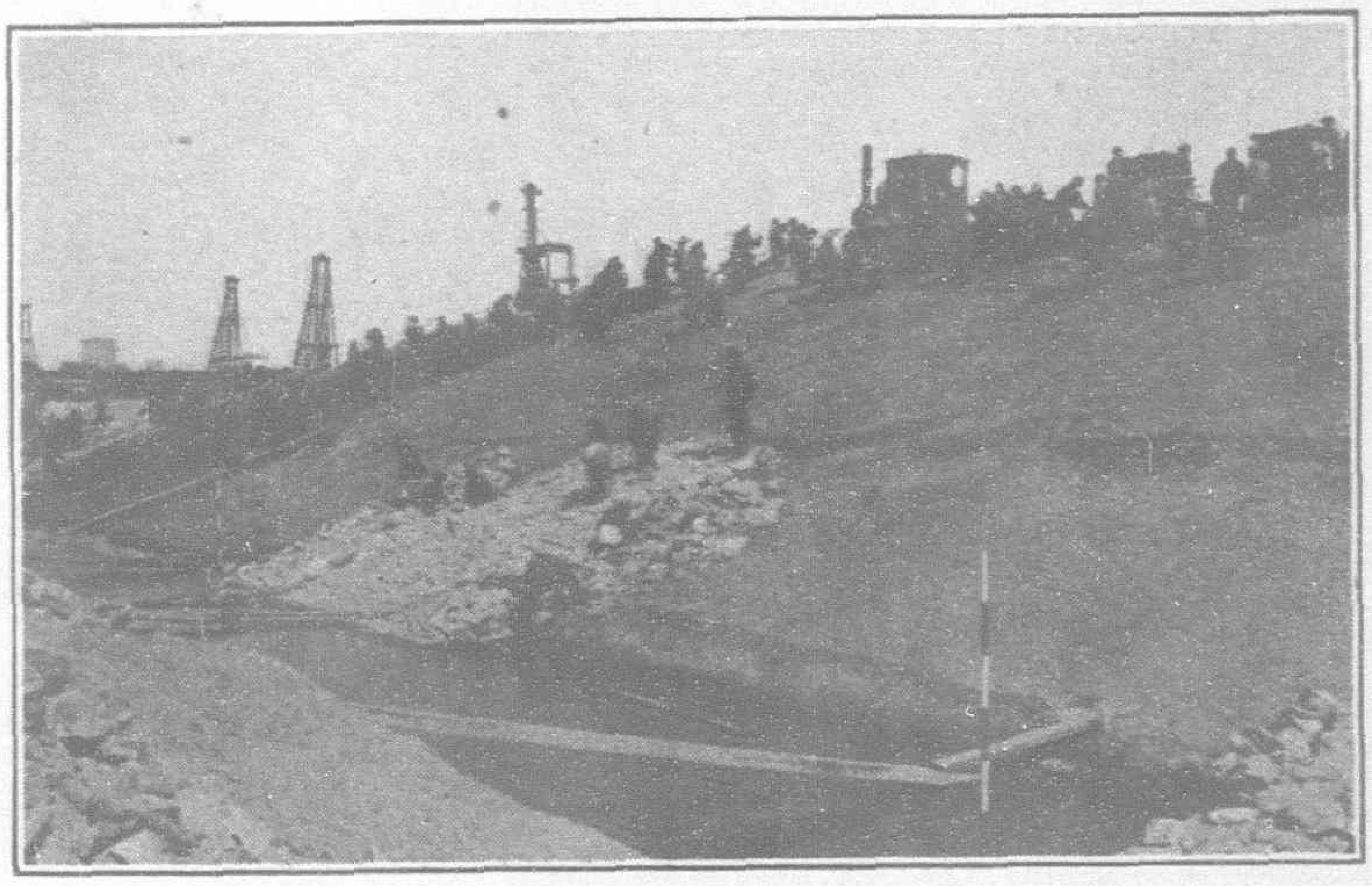
It is interesting to note that the chief engineer of the Whangpoo conservancy board has been attached to the board for more than a year as an honorary member.

EAST RIVER-DYKES.—Owing to the insufficiency of the funds available, the board has not been in a position to enter upon any of its comprehensive schemes, but has had to limit its activities to works within its power to finance which would give an immediate local relief, but at the same time form a part of the general scheme.

For years the East River has caused inundation of the regions to the North of Sheklung, and an area of some 170 sq. km. (200,000 *mow*) is yearly more or less under water during the rainy season. By closing the creek at Masai with a flood gate a considerable improvement of the flood conditions in the upper part of this region would be expected, though the salvation of whole area calls for more extensive works. In combination with the flood gate the dykes on both sides needed repair; and the board decided to execute these works during the dry season, 1919 to 1920. For this purpose $260,000 was appropriated. In addition hereto came the closing of a wash out at Siu Pong Kong through which a large region during the last two seasons had been flooded.



Ling-pai Dyke, East River



Dyke Construction at Lupao, North River

The work commenced on December 21st, 1919, and was successfully carried out during the winter months. An unexpected heavy precipitation setting in in the middle of February, caused some inconvenience to the construction of the flood gate, and delayed the work.

During some periods, as many as 12,000 laborers were engaged per day.

FLOOD GATE AT MASAI.—The structure is an ordinary open sluice gate with abutment made of concrete in proportion 1 cement, 3 sand and 4.5 crushed stone, with about 25 per cent. additional large stone imbedded in the concrete. The wings to protect the adjoining dyke slopes are made of rubble stone, with smooth facing. The following are the dimensions of the gate :—

Free opening between abutments	5.20 m.
Height from sill to top of gate	9.40 m.
Length of chamber	8.50 m.

Doors : Height 9.50 m., width 3.19 m.

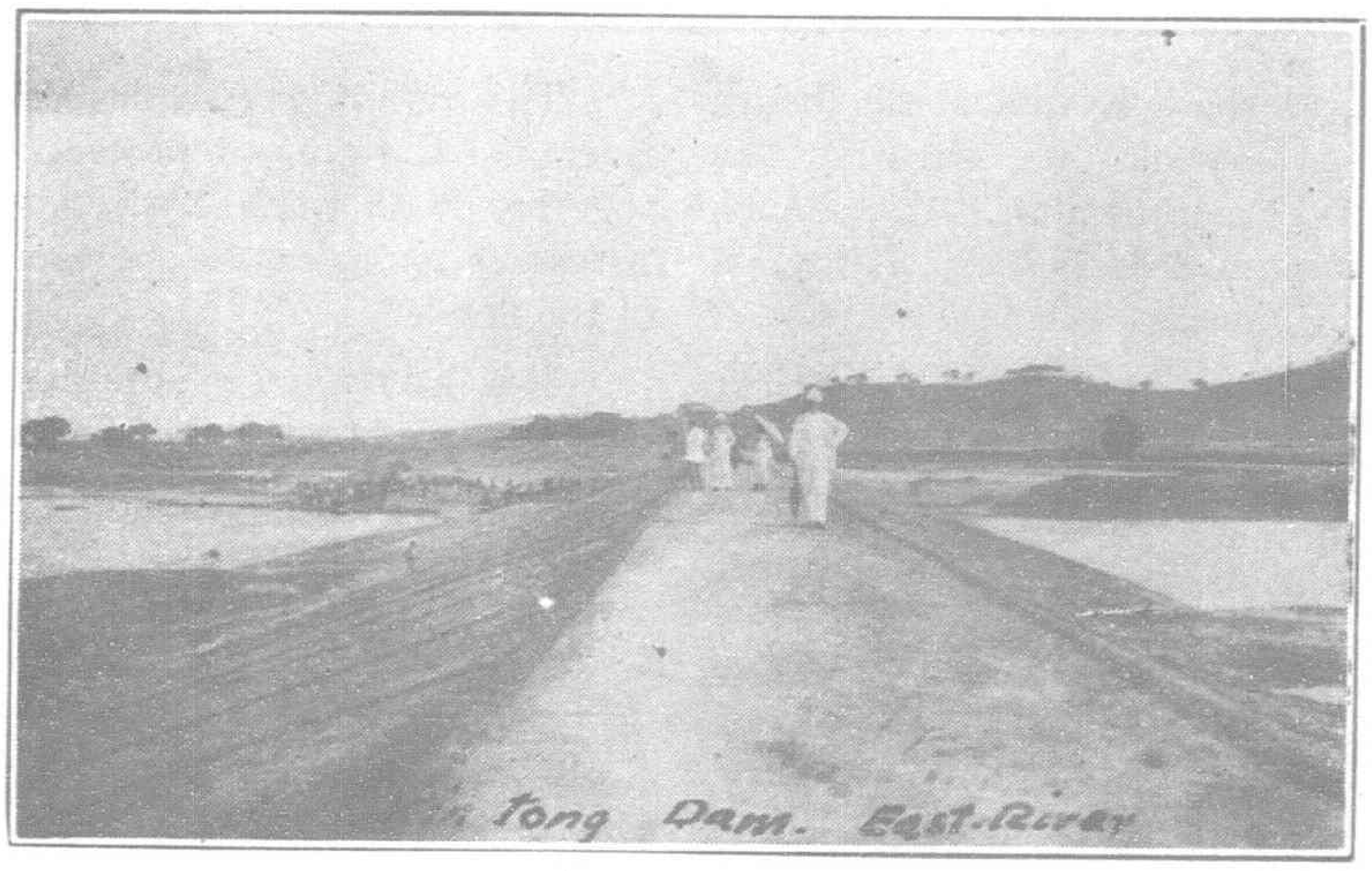
The concrete and wings have been completed, but the doors will not be put in before the next dry season. The gate is temporarily closed with wooden shutters.

The full effect of this flood gate will at first be seen when the creek at Hanam and Luklan is permanently closed with a cross-dam.

NORTH RIVER.—Excepting the repair of a stretch of dyke at Samshui, which work was executed in 1919 by the Samshui custom authorities, but paid for from the conservancy funds, no work has thus far been performed in the North River district. For the next dry season, extensive protection works are contemplated at Lupao, consisting of a dam provided with six Stoney sluices of 10 m. width each, intended to control the flow in the Lupao channel, in connection with the present dyke system.

This should be the first link in the chain that is designed to protect Canton and the large and valuable territory to the northwest of the city from inundation from the North-River floods.

The following extract from the statement of accounts shows the sums expended on the various works during the period covered by the report :—



Kin-tong Dam, East River

EAST RIVER WORKS :			Hongkong $
(*a*) Salaries and Wages			18,948.56
(*b*) Running Expenses, travelling and transportations			7,628.03
(*c*) Crib at Masai (uncompleted)			1,306.29
(*d*) Dykes			200,840.71
(*e*) Flood Gate, Masai			39,548.76
(*f*) Other works			660.61
		Total	268,932.96
Cash in hand at Masai	1,326.19		
Cash in bank at Sheklung	307.85		
		1,634.04	
		Total	270,460.45
NORTH RIVER WORKS :			
1st Installment on the Lupoa Sluice Gates		28,722.55	
Dykes repaired at Samshui ...		3,400.00	
Miscellaneous payments ...		593.20	
		Total	32,715.75

Captain Tsao Yu-ying, director-general of the board of conservancy works of Kwangtung, in an introduction to the report says :—

> The execution of this work has been made possible through the generous grant of over one million dollars from the central government, of sixty thousand dollars from the military government, and through the monthly remittances for office upkeep from the treasury of the local government.
>
> These grants—even though small compared with the total required for conservancy works in this province—have given the board an opportunity to start works in different places where local relief could be obtained, and through this the layman has received direct demonstration of the methods we want to employ in our conservancy schemes. It must be remembered, however, that full benefits will be obtained only when the work has been carried on to its completion.
>
> I earnestly hope, therefore, that further grants or a tax levied on the areas in question will put our board in position to continue its conservancy works for the benefit of a large population which, under the prevailing circumstances, is living in constant danger of having fields and houses destroyed by the continually recurring floods.

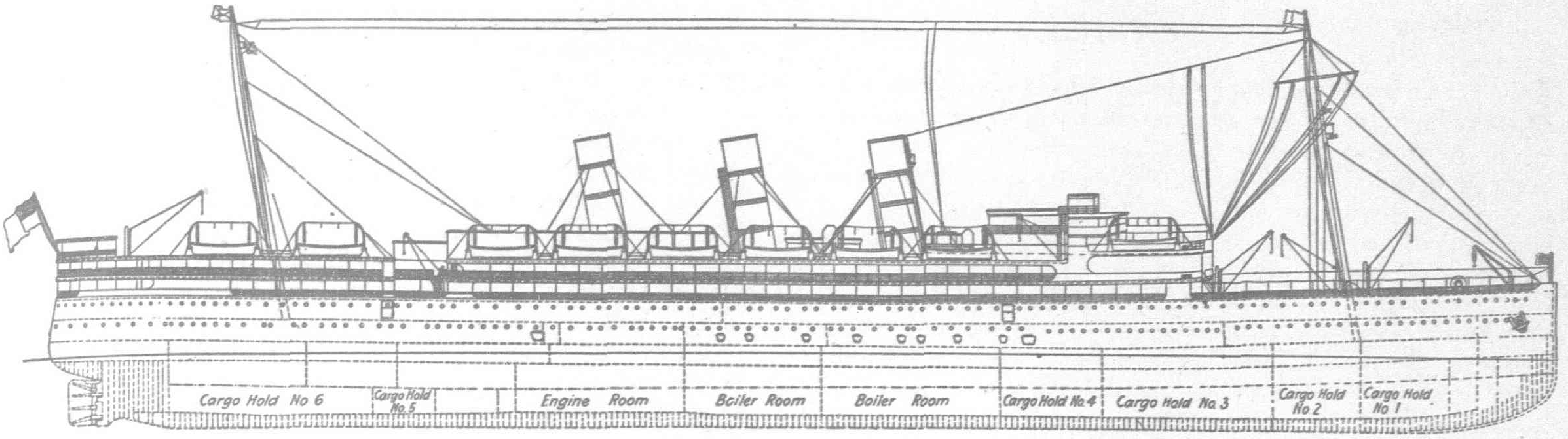
Captain G. W. Olivecrona, the engineer-in-chief, recalls in his report that a preliminary estimate of the cost of putting the West River dykes and flood gates in servicable order was $11,369,000 and that complete regulation of the rivers emptying into the Canton delta in order to prevent them inundating the country would cost in round figures $30,000,000.

To raise this considerable sum a tax on the land which would benefit from the improvements was recommended. It was stated that a yearly fee of 42 cents per *mow* would yield sufficient funds to permit the completion of the whole reconstruction scheme in fifteen years. The provincial assembly failing for some unstated reason to consider a proposal to make the tax suggested a legal obligation, the board was unable for lack of funds to enter upon any form of construction work for the time being." The expenses incurred in surveying had been defrayed from funds appropriated partly by the Flood Relief Funds kept the Cantonese Club at Peking and partly by the local government but these funds were exhausted.

This grant was made through the Canton customs and the commissioner of customs controls the expenditure of this money. In December last the military government contributed the sum of $60,000 towards the cost of the flood preventive works in the East River districts.

The pictures embedded herein give excellent impressions of the work now in hand and it is not difficult to forsee greatly increased prosperity in the neighborhood of Canton when floods become matters only of the past.

When the next group of British naval aviators arrive in Japan in June the Kasumigaura airdrome will be completed and ready for use, if plans of the Japanese naval authorities are carried out, says the *Japan Advertiser*. All capital ships of the navy will be provided with one or two airplanes when the airplane tender *Hosho*, 9,500 tons, is completed at the end of 1922. The model deck and sliding platform of the Kasumigaura naval airdrome are already completed and the first class of Japanese students to be trained there will consist of 20 members. These will be under the instruction of the newly arrived British aviators.



Profile Plan, s.s. *Naldera*

New P. & O. Liner "Naldera"

For India and Australian Service

THE steamship *Naldera*, which was designed and built by Messrs. Caird & Company, Limited, Greenock, Scotland, for the passenger and mail service to India and Australia of the Peninsular & Oriental Steam Navigation Company, is one of the largest and most modern units of the fleet of that company, says *Marine Engineering.* Her keel was laid in 1914, but construction was suspended on account of the war. Two years later work was resumed and she was launched in December, 1917. The vessel was first completed as a cargo carrier in 1918, and afterwards fitted out as a troopship and armed cruiser, but was never used for either of these services. After the conclusion of the armistice she was restored to her owners for completion along the lines originally intended. She was completed early in 1920 and made her maiden voyage in April of that year.

Of the three-stack cruiser stern type, the *Naldera* is designed for a speed of 18½ knots. Five of her decks, viz., the orlop, lower, main, upper and hurricane decks, extend the full length of the ship, while above these are the promenade and boat decks, each of which has a length of 440 feet and projects 2 feet 6 inches beyond the molded breadth of the vessel. This provides additional space for promenades. Expansion joints are provided amidships in these two decks.

Accommodations are provided for first and second-class passengers only. Most of the accommodations are in one, two, three and four berth staterooms, with a few special suites consisting of sitting room, bedroom and bath. All staterooms have lavatories with running water.

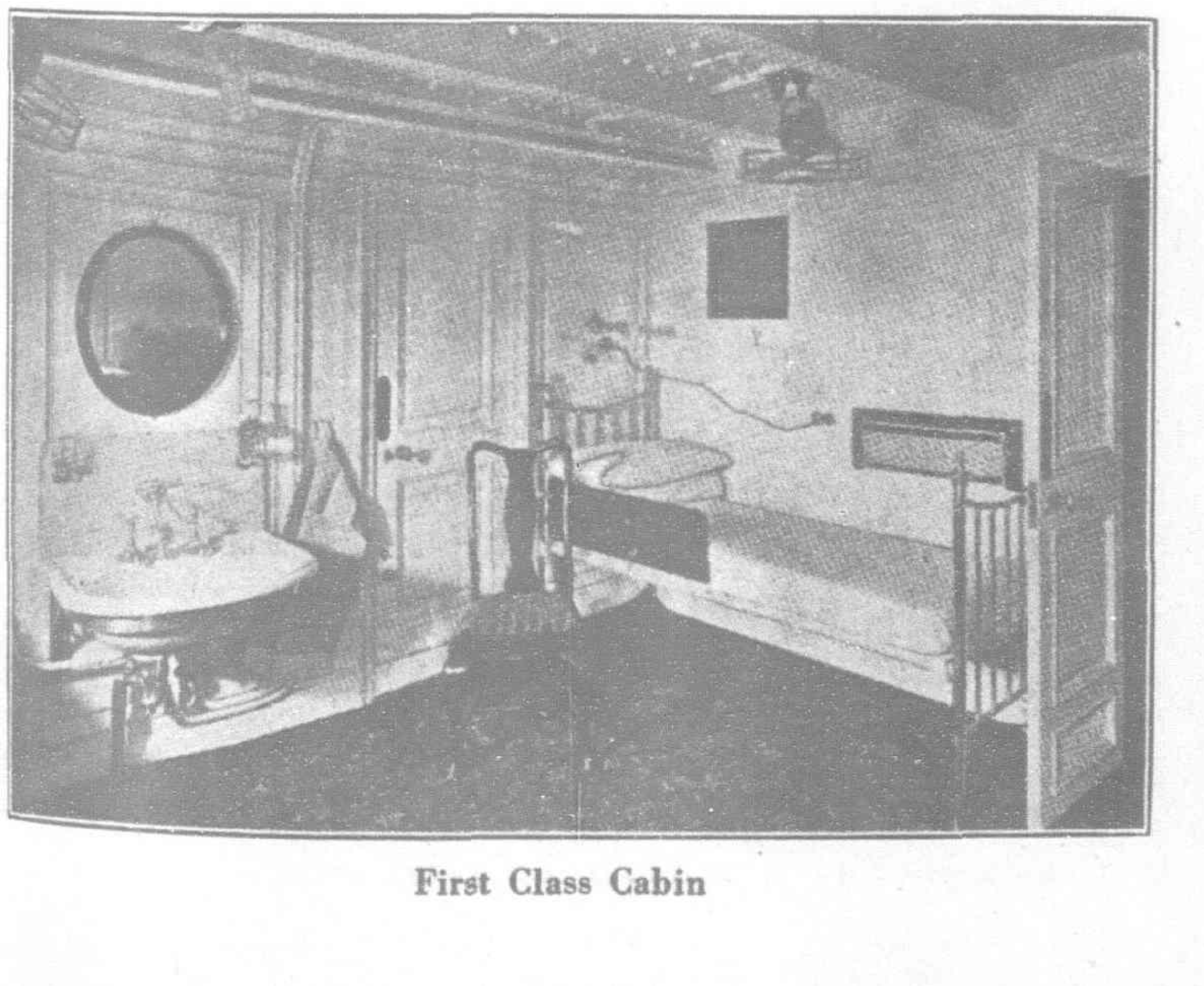
Two electric lifts are provided forward, which operate between the main and promenade decks, with landings at the intermediate decks.

Cargo is carried in four holds forward and two holds aft. Two of the forward holds are fitted for carrying refrigerated cargo. Space is provided aft for mail and baggage. The cargo is handled entirely by hydraulic cranes, the power for which is furnished by a pump and hydraulic accumulator in the engine room.

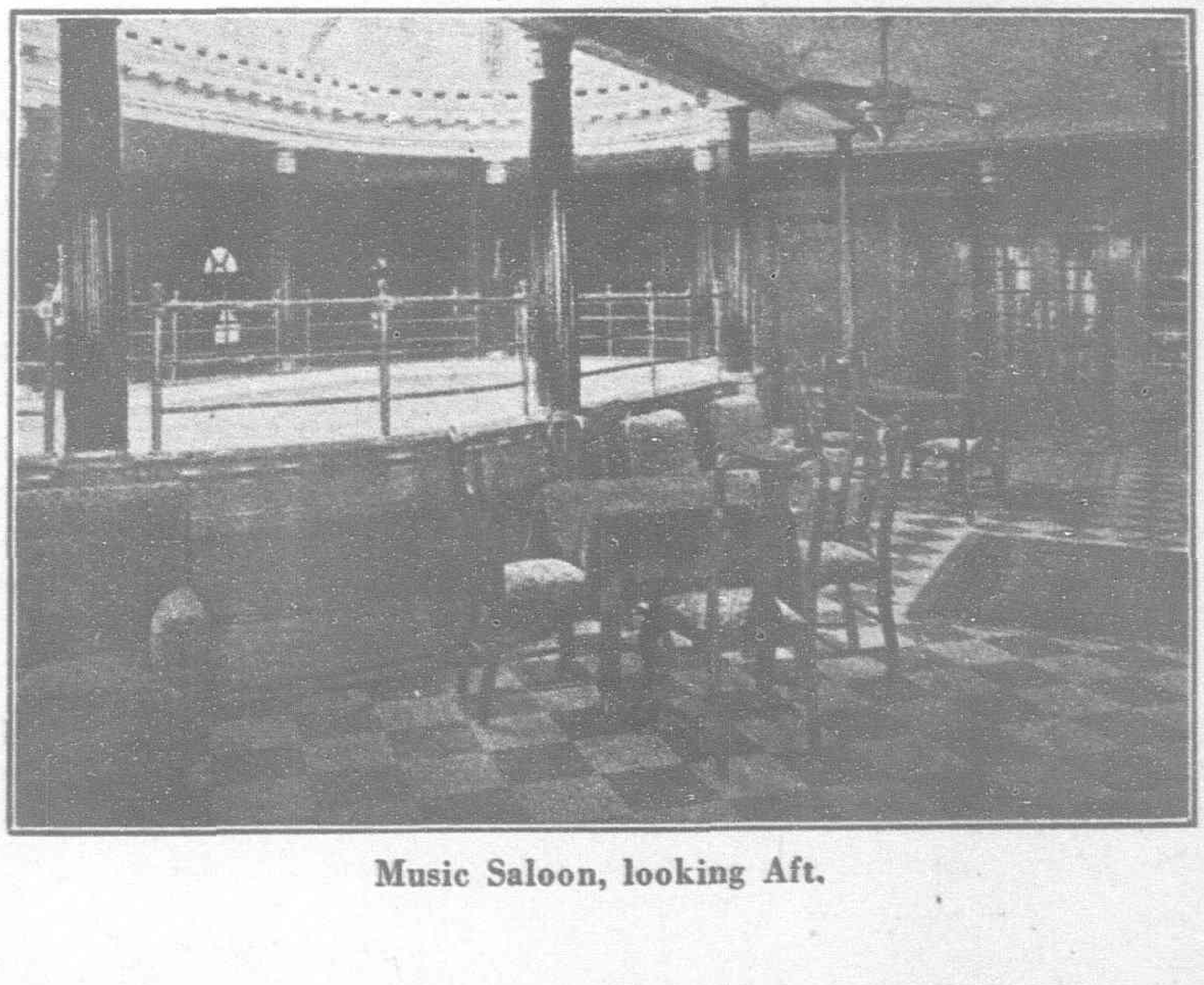
The vessel is driven by two quadruple expansion reciprocating engines. Steam is supplied by ten coal-burning Scotch boilers operating under the Howden system of forced draft. The ashes are discharged through the bottom of the ship by two Stone hydraulic ash expellers. An ash hoist is also provided in each boiler room.

The electric generating plant consists of six compound engines, driving generators having a total output of 280 kilowatts at 105 volts. The electric installation includes some 3,000 lamps and over 800 cabin fans, as well as electrically operated lifts, galley machinery and gymnasium appliances. A 15-kilowatt oil engine driven emergency generating set is fitted on the promenade deck.

The *Naldera* is now operating between England and India and Australia and is giving excellent service. A sister ship, the *Narkunda*, has been completed at the Belfast yard of Harland & Wolff and will also operate between England and the British colonies of the southern hemisphere, carrying passengers, cargo and mail.



First Class Cabin



Music Saloon, looking Aft.

Resuscitated

IT'S a long road that has no turn. The efficient public servants interred by the Wilson administration are being called back to life. President Harding is demonstrating that he has all the elements of greatness, the first qualification for which is the ability to choose the right man for the right place and then depend upon him. All along the line of appointments the rule holds good. In the state department we have the appointment of Mr. H. P. Fletcher, and now comes the equally cheering announcement that another assistant secretary has been found in Fred Morris Dearing. *The New York Tribune*, echoes our views on this appointment in an editorial entitled "Leveling Up." It says; "The nomination of Mr. Fred Morris Dearing to be assistant secretary of state is another illustration of the workings of the new rule of merit and fitness which Secretary Hughes has established for state department appointments. Mr. Dearing has come up from the bottom in the foreign service by virtue of character and preparation. He began as a young man by studying foreign languages and worked for a time as a translator in the postoffice department and the department of agriculture. He took a post-graduate course in jurisprudence and diplomacy at Columbia (now George Washington) University, in Washington. He went to Havana in 1904 as private secretary to the American minister there, and two years later was appointed, after examination, to be second secretary of legation at Havana. Between 1906 and 1911 he served as second secretary at Peking, again at Havana, at London and at Mexico city. For nearly two years he was assistant chief of the division of Latin-American affairs in the state department. Then he became secretary of legation at Brussels, secretary of embassy at Madrid, and later secretary of embassy and counselor of embassy at Petrograd, where he remained until November, 1916.

"Mr. Dearing has, therefore, had a broad experience in the actual work of diplomacy and is a competent observer and adviser. He is the type of man on whom the government must count to build up a permanent and technically trained diplomatic corps. There is more need to-day than ever before for an American foreign service staff which can compete on equal terms with the diplomats of other countries. We have traveled far beyond the stage at which diplomatic posts can safely be passed out to 'deserving democrats,' or to 'deserving republicans.' Fortunately, the state department, under its present management, is taking scrupulous notice of the fact."

Progress Made at Peking Syndicate Collieries

PRESIDING at the annual general meeting of the Peking syndicate on January 31, Col. Brinsley J. H. Fitzgerald, C.B., said: Our agent-general states in his report that:—"Provided the existing market conditions continue, and it is possible to dispose of the large increased production which may shortly be expected, the immediate future of these collieries is very promising. The present output is about 2,300 tons per day, and the developments which we are now in a position to put in hand will win areas of new coal sufficient to maintain it at that figure for a long period ahead. In addition, a considerable production, which I estimate at not less than 1,500 tons per day, will be obtained from our native pit operations at Lifeng when they are in full swing, making the gross out-turn to be disposed of between 3,500 and 4,000 tons per day."

Operations at Lifeng

The results of our operations at Lifeng are very satisfactory, and the outlook there is most favorable, the coal being of good hard nature, containing a large percentage of Yuho, which is the best lump coal. A further area, lying beyond the village of Lifeng, of equal size to the one we are now operating, we propose to develop as soon as our present operations are sufficiently advanced to secure a large output. A loading wharf and stocking ground is now being arranged near the Tao-Ching Railway, and sidings are being laid of sufficient size to enable 2,000 tons of coal to be loaded and despatched daily. As your chairman pointed out at the last meeting, the question of a dividend must wait until after the money expended on the coal mines can be capitalized. As you are aware, the board decided to send our consulting engineer, Mr. Arthur Hassam, out to China last July to visit our mines at Jameisen, to report and advise on our properties, and to assist in getting the best results from the very heavy expenditure which it was necessary to incur. I am glad to say Mr. Hassam has now safely returned, and will be pleased to give you the latest information in regard to our collieries, and his opinion as to future prospects; he will also be pleased to answer any technical questions you may desire to put to him regarding the mines.

Mining Engineer's Optimism

Mr. Hassam said that as he had only returned the previous night he was not in a position to submit a written report, but he had been very much impressed while in China with the prospects and possibilities of the syndicate's properties there. He had spent three months in China, and had gone over the whole of the properties, and discussed everything appertaining to the technical side, with Mr. Kenrick and the staff generally. They had been very much handicapped for some years in not being able to get the necessary machinery for dealing with the very large quantity of water in the Jameisen mines, owing to war conditions, and they had only been able to get the machinery sent out last year. This would affect a very material reduction in the costs, and an increase in the output. Having given details with regard to the progress of the properties, Mr. Hassam said he thought the present situation indicated that they were on the eve of better things, and his impression was very favorable in regard to the future. He expressed his obligation to Mr. Kenrick and the staff in China, who had rendered him every possible assistance. He congratulated the syndicate on having such an excellent and qualified staff to do their work in China. Everything was going quite smoothly, and he believed the syndicate was going to have a more prosperous time.

American Views on China Trade

Numerous factors have combined to induce depressed conditions in the chief Chinese business centres. The financial and industrial difficulties in Japan, largely eliminating that country as a market, were followed by the narrowing of the markets in the United States. Large amounts of native Chinese products have been tied up as a result, and the absorbing power for foreign goods has at the same time necessarily waned. Additional advices state, however, that there are evidences of a change for the better and American houses interested in trade with China should consider the importance of maintaining their relationships so as to be in an advantageous position when business revives.

It is interesting to note that a meeting of Chinese bankers recently held in Shanghai was the first national conference of its kind in the history of China. A subsequent meeting was held at Peking. The first meeting was held to discuss both foreign and internal loans, taxation and the consortium plans; the second to arrange a domestic loan for the purchase of rolling stock for the chief railway lines.

The United States has recently given its approval to a graduated increase in the customs tariff with China, to bring the general rate on imports up to the effective five per cent. contemplated in the Treaty of 1903. This change was in recognition of the need, in view of the reduced purchasing power of money, of an increase in customs receipts to maintain the government.

New Enterprises in Antung

There have been established in Antung a number of new industrial and business enterprises, particularly by the Japanese, whose activity in these lines has continued throughout Manchuria.

In a general sense the tendency among Japanese has been toward promotion of stock companies of various kinds, while among the Chinese there has been great development of individual enterprises.

The Manchurian Mining Explosives Co., a Japanese firm capitalized at $500,000, completed a plant consisting of about 30 buildings, and is now engaged in manufacturing black powder and other explosives which will be sold mostly to mines and quarries in Manchuria and Korea. The plant has an area of 55 acres, employs more than 100 workmen, and uses materials mainly of Chinese origin, although Chile saltpeter, sulphur, cotton threads, fuse and percussion caps are imported from Japan.

The Anto Yoko Waste Silk Spinning Mill, completed recently, is now engaged in spinning silk thread from waste silk.

The Anto Hotel, with rooms in both foreign and Japanese style, also was completed in 1919 and supplies long-needed accommodations for foreign travelers in Antung.

The site of the Yalu Paper Mill (a Japanese concern capitalized at $2,500,000) was surveyed and temporary office buildings erected, preparatory to building the main mill. It is reported that the firm will manufacture 50,000 tons of paper pulp yearly from Yalu timber.

Most of the buildings for the new electric power plant of the South Manchuria Railway were completed and a small part of the machinery installed.

Why Stop at Bagdad?

WHEN Dr. Sun Yat-sen was explaining his 100,000-mile railway scheme to Yuan Shih-kai and his intimates, Liang Shih-yi, head of the Chinese railways, stuck his finger on the map and tracing a line which crossed Tibet and stopped at the Turkestan frontier, asked, "what is this line for"? "That," replied Dr. Sun, "will open up the great gold fields of Tibet and link up with the Russian system in Central Asia." "But why stop there," rejoined Liang, "why not keep going on and end at Constantinople; its just as practicable." After reading the following editorial gem from the *Minneapolis Journal*, the same question comes to us, Why, Oh why, stop at Bagdad?

A Mid-Asian Railroad

The Japanese, it is reported, contemplate the construction of a railroad from their occupied Manchuria through Inner Mongolia, across the desert of Gobi, into Chinese Turkestan, across what was Russian Trans-Caspiania, touching the Caspian Sea, into Mesopotamia, terminating at Bagdad upon the Tigris.

At the Mesopotamian metropolis it would link up with the Constantinople-Bagdad railway, with its extension to the Persian Gulf and along the seacoast into India, and with the line that is certain to be constructed across the Syrian Desert to Palestine and Egypt.

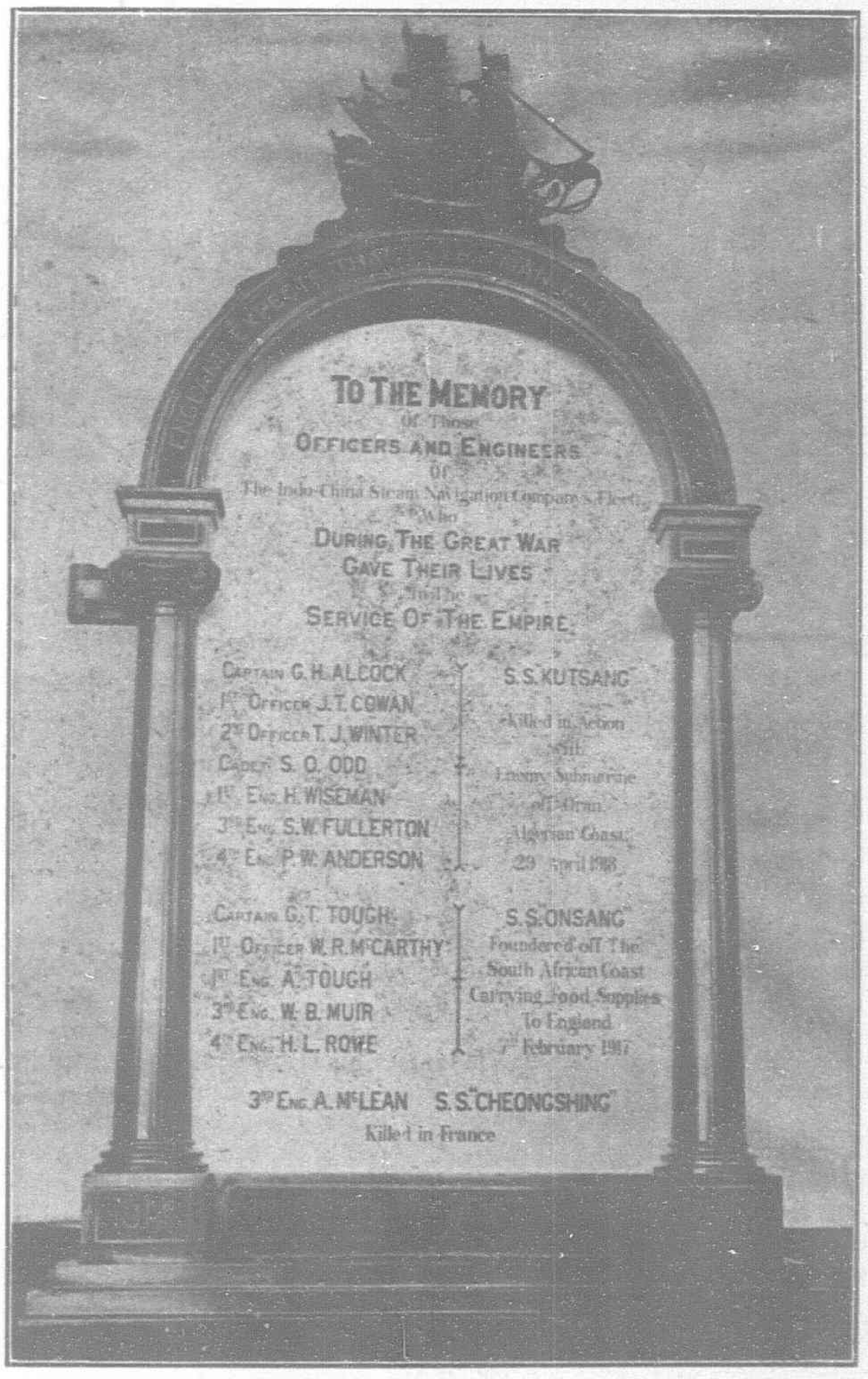
The Japanese conception seems a grandiose one, but it is no more so than Cecil Rhodes' project of a Cape-to-Cairo route, to-day six-sevenths, more or less, actually in operation; or than the Pan-American route through Mexico and Central America, down through the Andean high valleys, to link New Orleans and El Paso with La Paz and Buenos Aires. The Pan-American railway project is on its way to be completed some fine day, perhaps a nearer one than we realize.

The Mid-Asian route the Japanese have in mind geographically takes advantage of that central Continental depression which, with some interruptions, extends from the Caspian to the Gulf of Pechili. Politically it skirts China and Siberia, and follows that ill-defined trough that exists as a sort of nondescript zone between what was the Chinese empire and the Russian autocracy. As the empire and the autocracy are for the nonce, at least, defunct, the Japanese may be taking time by the forelock in staking out a belt to constitute their railroad right of way.

As right of way it does not cross or interfere with the existing Siberian Trans-Continental railway, nor with the forthcoming British Chino-Indian railway, which is certain some day to connect Shanghai and Calcutta by way of the Yangtze Kiang valley and Burma.

Of the three natural trans-Continental Asian routes east and west, the Northern or Siberian, the Southern or Chino-Indian, the Middle, this Japanese projected one, the last furnishes the easiest natural way, although it lies through the least populous and largely arid lands. But time was, perhaps pre-historic, when great transportation between China and the West followed this route.

It is interesting to note, as well, that along this line proceeded the armies of Genghis Khan to the conquest of Persia and the Bagdad Caliphate, and from what was lately Russian Turkestan, Tamerlane, the descendant of Genghis, proceeded to the conquest of India. It is a Japanese legend, believed by every schoolboy, that the Mongol Napoleon, the most extensive conqueror in history, really was a Japanese adventurer who rounded up the Mongolians into armies for the conquest of everything in sight, as the Corsican did the French.—*Minneapolis Minn. Journal*, March 6, 1921.



The above is a photograph of the memorial tablet made by the Shanghai Dock & Engineering Works for Messrs. Jardine, Matheson & Co., Ltd., to be placed in the Hongkong offices of that house to perpetuate the memory of the officers and engineers of the Indo-China Steam Navigation Company who gave their lives for their country in the late war.

AMERICA AND JAPAN

The Swing of the Pendulum

SLOWLY the pendulum is swinging the other way. Talk of war with Japan is giving place to demands for co-operation and harmony. American editors are beginning to see clearly behind the clouds of propaganda raised to obscure the truth. They are becoming tired of the theft of valuable news space to bolster up the cause of this or that foreign nation. They are beginning to ask questions. From many quarters comes the query in some form or other, who is "propagating" the war between America and Japan ?" It is a good sign, a healthy American one. The answer may be somewhat obscure to the man sitting in the small, country sanctum, but the editors of our largest newspapers have only to refer to or recall the mass of free matter that has poured in on them from so-called bureaus of public information, free press associations and special writers, to accurately gauge the situation and answer the question. We present herewith editorials from all sections of the country as indicating a new line of thought, a warning to interloping propagandists that their hope of converting the United States into a mad-house vanished on March 4th.

TALK PEACE, NOT WAR

The following syndicate editorial has appeared in many of the smaller newspapers of the United States :—

Let us have an end of this talk about possibilities of war between England and the United States and between the United States and Japan. The United States has lived at peace with Japan ever since there was a United States, and she has lived at peace with England for over a century. There is not one question pending or prospective between this nation and either Britain or Japan which cannot and should not be settled by peaceful negotiation.

It is ridiculous that a nation which professedly wishes to avoid entanglements with foreign nations should be prodded toward disagreements with them instead of toward agreement. There is no possible entanglement so complete and so long drawn out in its results as that of war and its aftermath.

Nobody in the United States wants war with the great sister nations. No rational person in those nations wants war with us. Can we not govern our speech in accordance with the true desire of the people, and consider in friendly fashion the questions pending between us and our neighbors ?

THE MENACE FROM THE DIRECTION OF URGA

THE FAR EASTERN REVIEW is not the only paper that has a right perspective on the Siberian situation. The veteran editor, Mr. C. B. Blethen, who controls the *Seattle Times*, has grasped its proper significance. The opportunities for exact knowledge of what is going on in Siberia are as good, if not better in Seattle, than in Shanghai, as through that port pass nearly all the travelers from Siberia. They are not all agents of Trotsky either.

"The ferment in the Near East, is being duplicated in Siberia, where the Bolsheviki are preparing to contest Japanese control over the seacoast and an extensive stretch of the hinterland.

Russian troops are being moved into the district which would be the base from which operations would be conducted in the event a big drive against the Japanese were attempted during the coming spring and summer.

Recently, this movement has attained considerable proportions, the forces engaged being described as well armed, under iron discipline and prepared for any action that may be ordered by the Moscow authorities, although lacking in clothing and other of the equipment of a modern army.

For the present, at least, another Polish adventure apparently is not contemplated. Perhaps the memory of the crushing defeat they sustained last year is too vivid in the mind of the Bolsheviki. Coupled with this probably is the ambitious plan of the Third Internationale to back up propaganda work in the Orient by a show of force.

Russian policy under the new regime, as under the old, is turning to the East. Its armies are driving upon Persia and Turkey, in the former case because the road to India through Persia is the easiest that any conqueror can follow and in the latter because Turkey is the most disturbed country in the world at this time.

Foreign wars are essential to the continuance of the Red regime. The Slavic masses must be induced to expend their warlike energies abroad in order that they may not become involved in revolution at home. The Bolsheviki undoubtedly are in position to conduct a moderate campaign in Persia and Turkey and, simultaneously, a greater drive against the Japanese in Siberia."—*Seattle Times*, Feb. 23, 1921.

A RACIAL MADHOUSE

Probably the highest American authority on Russia's Asiatic policies is former Senator A. J. Beveridge. His book, written in 1900, on the "Advance of Russia" is worth reading even at this late date. He clearly prophesied much that has taken place since then. He recently uttered a timely warning to the nation, when, in an address on Washington Day, he inveighed against the swarms of foreign propagandists that are creeping all over America. He said :

" Any political association with any foreign government is as foolish as it is unpatriotic. The moment we interfere or even are asked to interfere in foreign political broils or problems we become a racial madhouse. Infinitely more important than any international solidarity is American solidarity."

Commenting on the above speech, the *Albuquerque N. M. Journal* rightly says :

To some, this may appear a selfish doctrine. But any doctrine that has for its aim the welfare of 100,000,000 human souls, after all, is unselfish, if one may indulge in a paradox.

Does not the welfare of the 100,000,000 citizens of the United States count for something ? If we take sides with Korea against Japan, then we shall have to take sides against Britain in favor of Ireland, for the same principle of self-determination is involved.

And suppose that to-morrow Zanzibar, or Madagascar, or the Tierra del Fuego decides that it is being oppressed, how can we consistently refuse to assist it in its "national aspirations ?"

It is precisely this that Senator Beveridge means when he warns against our becoming a "racial madhouse."

We have mentioned this matter before, and will do so again, when the news of the day warrants it, as it warrants now ; for we believe that the greatest danger that faces the United States to-day is that of becoming embroiled in war through the selfish machinations of foreign propagandists, of whatever race, color, or previous condition of servitude they may be.

Yes, this may be a selfish view ; but it is less selfish than the aims of those who would draw a nation of 100,000,000 into strife in order to gain their point.

From the above, it would appear that the larger centres of American thought and population have no monopoly on sound judgement and patriotism. Even in New Mexico, editors are getting wise and are up in arms against professional war-makers, operating through press bureaus whose object is to embroil the United States by appealing to our sympathy and sentiment.

SIBERIA NONE OF OUR AFFAIR

Editorial from *Detroit Free Press*, January 27, 1921

"President Wilson's suggestion in his recent letter to President Hymans, of the League of Nations assembly, that soviet Russia be protected from outside attack is being widely and naturally interpreted as a side slap at Japan. This is because the Japanese operations in Siberia always have come more or less under the presidential frown, though rather inconsistently in view of Mr. Wilson's approval of the Shantung grab.

But why should Mr. Wilson or any other American undertake to object to the development of Japanese hegemony in eastern Siberia ? What business is it of ours ?

Is Siberia a white man's country ? Does the portion bordering on the Pacific coast belong by nature to the Slavs any more than it belongs to the Nipponese ? Has Petrograd or Moscow ever done anything to develop it in a broad way ? Have the Russians any title other than title by conquest and military occupancy? Or is it conceivable that a Japanese administration can be any worse for the native inhabitants than the czarist regime was and the soviet regime is ?

It is certain the Japanese must go somewhere to find an outlet for their energies and for their multiplying population. What place can they find where they will clash with legitimate counter interests less than they will clash in Siberia ? Where can they develop and come less into clash with Caucasian interests ?

If the Japanese go into eastern Siberia and devote their energies to development of that country they are likely to look less longingly at the Philippines, and at Hawaii, and at South America, and at Australia, and at New

Zealand, yes, and at the west coast of the United States. For a time, anyhow, we may expect a relief of the pressure in parts of the world which views them with unsavoring eye.

It is true the Japanese are likely to build up a considerable continental power if they choose to go into Siberia—and it is not yet clear that they will so choose. If in addition to Korea they permanently acquire Vladivostok and some territory to the westward, they will have a strong strategic foothold. But unless they are throttled the Japanese are going to expand. Why not let them expand where the land is open without grudging them a cold and barren area?

Aside from all this, the Siberian question is distinctly none of our business. To attempt to stop Japan in northeastern Asia is no more our right than to attempt to bolster up Japan's claim in Shantung was our right.

There are plenty of issues between the United States and Japan that cannot be dodged and must be met. They will keep the hands of our diplomats busy. In the name of all that is sensible let us leave things outside our sphere strictly alone.

RINGS TRUE

The *Boston Post* comments as follows on a statement obtained by the *New York World* from the Japanese minister of foreign affairs, as follows:

"Perhaps no truer hope for the world's safety and relief has arisen since the peace of Versailles than in the press campaign for disarmament inaugurated by the *New York World*. The voice of true America speaks once more, recalling storm-tossed humanity to peace and sanity.

No other nation can speak for this great cause with such effect, for no other nation occupies so unique a position.

It is the tragic destiny of a comparatively small but self-reliant nation like Japan to be obliged to watch anxiously the dispositions and measures of nations more fortunately circumstanced and with greater resources at their command. She inaugurates experiments in disarmament in advance of other nations.

The situation is beyond her control, and she can only follow the example of others or co-operate with them. This is welcomed by Japan, for it will not only relieve her of the strain of unequal struggle, but will make possible the realization of her modest desire for a career of peaceful development.

Inasmuch as his majesty, the emperor, is at present indisposed, I do not feel at liberty to request the expression of his personal sentiments on the question of disarmament. But I cannot doubt that, as the representative of a long line of pacific monarchs, his majesty's dearest wishes would be intensely gratified by anything which even promises some relief to the intolerable sufferings and burdens of the civilized world.

If that does not represent Japanese sentiment, nothing can. It is the solemn and well considered declaration of a responsible minister of the empire, said with the full knowledge that it would be taken in all the chancelleries of the world as the view of the Japanese government. And it rings true, no matter if the professional Japanese baiters shall say that it is the usual bland utterance of a nation that must not be trusted or even considered honest."

ASK THOMAS F. MILLARD

"WHO IS PROPAGATING THE AMERICAN-JAPANESE WAR"?: The question is asked by the *Pottsville (Pa.) Journal*. Turn back to your files of August 1919 and refer to your headlines over the story of the first hearing of the Shantung question before the senate committee on foreign relations and dollars to doughnuts it reads, "THIS MEANS WAR"! Ascertain who said it, his antecedents, affiliations, and who is financing him, and you will be able to answer the question to your own satisfaction.

DANGEROUS JINGOISM

Does any American want war with Japan?

It is not an idle question. Some Americans, most of them in positions of influence, act as if they wanted exactly this.

The United States and Japan have always been friendly. There is no reason why they should not continue friends. Neither wants trouble with the other. Neither, putting the issue on another basis, can afford to have war.

The situation would seem promising enough were it not for the activity of some people who choose to harp continually on small differences of opinion, who preach the dangerous doctrine that Americans and Japanese are drifting inevitably toward a collision, who pretend to see the national horizon darkened by war clouds, all the time piling fuel on every little flame they find and doing their best to make it a conflagration.

This is sheer jingoism and it is fraught with peril. Most Americans—we trust most Japanese—are thinking straight on this question. They need to be on guard against insidious influences which pretend to lead only to delude.

None of this means, certainly, that the United States should abate anything of its determination to maintain a reasonable naval and military preparedness. Quite regardless of Japan, this is no time to surrender to pacifism. It is time, however, to avoid every word or deed tending to magnify differences between nation, to avoid every suggestion of an irritating nature—in short, to cultivate friendships, not invite antagonisms.

Let there be an end of Japanese baiting. Let there be an end of the dangerous habits among a few Americans of reading into every Japanese policy some hidden animosity against this country. Suspicion breeds suspicion. Talking war invites it.

Who among us really wants war with Japan.—From the *Cleveland (Ohio) Plaindealer.*

DESPITE THE MEDICINE MAN

"It would be stupid to disregard the fact that many men, in public as also in private life, look upon our disputes with Japan as containing the seeds of war.

The basis of their uneasiness is the activity of the military party of Japan, the shiftiness of the Japanese diplomacy, the apparently insolvable problem of adjusting the racial antipathies in California, the clash over the mandatory of Yap and the ambitions of the rival American and Japanese naval constructors. . . .

The coming of war marks ever a plain trail. Only the stupid and blind failed to see the "irreconcilable conflict" approaching between the north and the south sixty years ago. The world war was a quarter century in working up to the point of firing the first guns. There are no cleancut signs to-day indicating that America and Japan must, soon or late, proceed to make war medicine."—From the *Detroit (Mich) Journal.*

THE FIRST LAW OF NATURE

Press despatches say that the Japanese are embittered because of the constant interferences on the part of this country in Asiatic affairs.

Other nations are keeping still but America continues to aggravate the Japs. We are protesting over this and that and diplomatically we are fighting them at every turn of the road. England isn't doing it and neither is France. If this policy is continued war is inevitable. It may not come for five years or ten years but it will come.

The Japs are virile and aggressive. They are increasing very rapidly and their islands are not large enough to support them. Either they must overspread into other countries or they must starve.

This country and other countries have shut out the Japs. We tell them they can't come over here and then warn them against acquiring territory in which to turn their increasing millions.

The Japanese are not doing anything we wouldn't do as self-preservation is the strongest law of nations. If this country was overpopulated and we couldn't raise enough to feed ourselves and if Canada was populated by the Chinese and we either had to have Canada or resign ourselves to a policy of race-suicide, do you think we would hesitate about taking over Canada?"—From the *Greenfield*, IA. *Free Press*, January 27, 1921.

THE PROBLEM!

The Troy (N. Y.) Evening Record says:

"Obviously the logical direction for Japanese expansion is westward—on the Asiatic continent. That really is what has been happening for a quarter of a century and more. It has created the Korean problem. It has challenged Chinese opposition. It will continue to be a source of trouble as long as some definite arrangement is not made whereby Japan may have opportunity to develop Asiatic territory. But Asiatic territory is all taken. That is where the difficulty lies. The Japanese may either be forciby confined within their own legitimate territory, or concessions may be made to them in eastern Asia. As neither of these alternatives is likely to be followed, the solution of the Far Eastern problem is such as to give experienced European American diplomats cause for serious thinking. It is a problem that will loom larger during the next few decades."

JAPANESE EXPANSION!

"Activity of Japanese in America promises to be curtailed in the near future so that the Nipponese will of necessity turn to other lands as desirable breeding places. Facing such conditions we may well expect the Japanese to push farther into Siberia just as Mr. Hammond suggests, at the same time continuing the campaign which Nipponese fondly hope will end in complete control of the Celestial empire. Japan must expand or revert to a nation of the third power, a consummation not at all in line with Nipponese ambitions. —*Hanford Sentinel.*

MR. HUGHES' WISEST COURSE

The Brooklyn Eagle comments upon the fact "that the policy of the present administration does not materially differ with that of the previous administration in the matter of defending America's rights, which means, among other things, that Mr. Hughes will follow up the protests made by President Wilson in the matter of the disposition of mandates and in the surrender of the Island of Yap to Japan." It concludes by saying that:

"It is reported to-day that the navy department is shortly to order the entire fleet to the Pacific. This would be interpreted as a threat to Japan and would create suspicion of our motives everywhere. This is not to be thought of and we refuse to believe that Mr. Hughes has so far misread American sentiment as to think that the country would sanction such a course. He is wise in upholding American rights and in protecting American interests,

> but he could not make this nation an international bully without betraying American interests and running counter to the nation's purposes."

Evidently, sensible Mr. Howe of Brooklyn, is not with the war-makers who would hail with joy the dispatch of the entire American fleet to the Pacific in order to impress upon Japan that she must dance to our music.

JINGOES AS THE ENEMY OF WORLD PEACE

Under this caption *"The Compressed Air Magazine,"* the house organ of the important Ingersoll-Rand interests, says:

> A small number of Americans, comparatively, realize or appreciate the importance of the commerce of the United States with Japan; otherwise they would not listen with credulity to the "loose talk" of a possible conflict between the two countries.
>
> Many of the unnecessary international frictions could be avoided if each nation were to give to others a little more credit for honesty of heart and purpose.
>
> Jingoism is to be condemned, because all nations have suffered from it, including Japan, which like the rest of the world has been misunderstood and misinterpreted. Sometimes ignorance of a foreign country and a tendency to over-estimate the intelligence of the people of another country are responsible for mutual suspicions and misunderstandings.
>
> The American people who are finding fault with Japan are those who have never been there and who are not acquainted with the real feelings and disposition of the Japanese. Americans in Japan who have studied the situation there know that the leaders of Japan are eager for American friendship."

It's a pity that other important American manufacturing interests do not get in touch with and listen to their Japanese representatives. It is not only good common-sense but sound business policy.

THERE ARE OTHER SCRAP BOOKS

The *New York Evening World* is denouncing the sword rattlers. If it had only criticized its Wilsonian oracle for creating issues that Harding has to face, maybe the situation would have been different. However, better late than never. Under the title of "Sword Rattling," it says on March 16:

> The Tribune had the entire fleet concentrated on the Pacific Coast. A *Sun* correspondent adds a forecast of an army concentration in the land of the Native Sons. On the authority of an unnamed "high official," the *Sun* correspondent reports:
>
> "The controversy between the United States and Japan over several matters long ago reached the stage where it became necessary for this government to assert itself unmistakably."
>
> Such "loose talking and loose thinking" deserve official notice and speedy denial.
>
> It was by precisely such gestures, such "unmistakable assertions," that Wilhelm of Germany "kept the peace of Europe" by rattling the sword.
>
> In Japan such an irresponsible statement will be used by the Japanese militarists to goad the parliamentary bodies into renewed military activity. It will be used to create fear and suspicion of the United States and to make peaceful settlement by negotiation and agreement more difficult.
>
> Loose talking on "unmistakable assertions" and Japanese-American "controversies" can only embarrass the State Department and make bad blood.
>
> One individual, at least, would view such a concentration with delight. Washington B. Vanderlip is hoping for just such a "demonstration." If the ambitions promoter of Siberian "concessions" could only collect a scrap-book of such comment and irresponsible forecast he might be able to return to Moscow and negotiate new contracts for the exploitation of several hundred thousand more square miles of Siberian territory."

Vanderlip is not the only one who might cash in on a scrap-book filled with these clippings. Other people are being well paid for keeping alive an agitation against Japan and whose continued usefulness depends upon the scrap-book voucher presented as evidence of money earned.

THE REAL MENACE OF JAPAN

If it's not one thing it's another. Just as we have gotten comfortably through a national election, along comes Baron Saito, governor of Korea, and opens up a question that if agitated must have far-reaching results over in America, and other democratic countries. The *Columbus (Ohio) Citizen* sounds the alarum to American institutions in an editorial entitled "Too Dumb to Vote!" It says:

> Baron Saito, the Japanese governor of Korea, has opened a fine field for research by his refusal to extend the electoral law to the natives under his charge.
>
> He says the majority of Koreans are mentally incapable of exercising the duties of citizenship.
>
> In other words, they are too dumb to vote.
>
> How dumb must a person be to be denied the ballot? It surprises a citizen of this republic to learn that any man—or woman either—outside a booby hatch, can be termed too dumb to vote.
>
> Here for years we've been voting dummies of every kind and caliber—even dead men in a crisis—and not getting excited about it.
>
> It would be interesting to find out exactly how dumb is a Korean and how much dumber is a dumb Korean than a dumb American politician.
>
> Let's hope the Japanese aren't going to get too fussy and establish a lot of mental standards in the Far East that will stir up all sorts of complications if they creep westward.
>
> American politicians like their constituents dumb and they'll be everlastingly dumbfounded if they're ever anything else.

No wonder the American demagog politicians and propagandists have it in for the Japanese. They are always springing something new to take the joy out of life, and injure their business.

DAVID HARUM'S ADVICE

John Hays Hammond, famous mining engineer and one of the most noted public figures in the United States, favors co-operation by the United States and other nations in the solution of Japan's expansion problem. He has told the foreign affairs committee of the house of representatives that Japan must have outlet for its population and trade. He advocates the acquisition by Japan of a tract in Siberia about the size of California. This tract, he says, is rich in iron and coal, which Japan needs, and is climatically suited for colonization.

Obviously, such a solution of Japan's emigration problem must await stability in Russia. There is at present no Russian government with which an agreement of sale such as proposed by Mr. Hammond could be properly concluded. Later on, circumstances may be such that this proposition can be given consideration.

Japanese expansion in the Far East has been frowned upon in the past by the United States and other powers, but the time has come to consider whether this is not, after all, the right solution of a vexing and dangerous situation.

The United States will not admit Japanese immigrants, now or later. Neither will Canada, Australia, New Zealand or South Africa. Even in Mexico and South America, opposition is beginning to crystalize. Japan is even now badly overcrowded and this condition is growing worse year by year.

The other nations of the world are not Japan's keeper, perhaps, but it is certainly to their own interest to remove an international irritation that might become serious. As "David Harum" said, speaking of horse trades, "It's a good idea to let the other fellow make a profit once in a while."—From the *Wheeling W. V. Interligen'cr.*

TROUBLE MAKERS

George Gleason, Y. M. C. A. secretary of international reputation, speaking at a meeting of the Rotary Club, expressed the sentiments of many Americans when he criticised those newspapers that are forever trying to see preparations for war against the United States on the part of Japan and who continue to stir up trouble between the two countries.

The differences that have arisen are serious enough without being made worse. They are not, however, likely to result in war unless we persistently aggravate them and give Japan just excuse for the war that some of her yellow journalists and yellower statesmen appear to want. There are elements in both countries that talk war on every occasion, but the great bulk of the population in either is opposed to any such folly.

America unquestionably would defeat Japan in any conflict, and so would end forever the aspirations of the Japanese to be dictators of affairs in the Far East, but the conflict would be costly and inexcusable. The world is tired of wars. Another such as we just have had might wreck civilization. Talk of war should be subordinated to discussion of means of preserving peace, and Mr. Gleason makes a very practical suggestion when he says that we can do more in that direction by cultivating international friendships than by any other means. Stirring up hard feeling between us and the Japanese is precisely the opposite of that.—*Harrisburg (Pa.) Telegraph,* March 1, 1921.

ENGLAND, AMERICA, JAPAN

No prudent politician in America or the British empire hates the Japanese. On the contrary, there are many reasons why they admire them; but they do discern that the force of circumstances will compel them to attempt to break through the barrier made round them by the English-speaking peoples, Russia and China. Japan has honestly tried her hardest to solve her problem of over-population by developing manufactures and a system of intensive cultivation of crops, but has failed. She must therefore either artifically check the growth of her population or, like Great Britain, build an empire on the sea at any cost. Will someone suggest another alternate solution of the tragic problem, and thus try to save the world from another cataclysm?

Numerous American writers on foreign policy seek a reunion of some kind with England in order to stave off a Japanese attack. All would welcome that.

But what about the future of Japan ?—From *Justice*, London.

THE YELLOW WORLD'S EXPANSION

Since 1906 Chinese economic invasion of Inner Mongolia, along the whole extended border, has been going forward at the rate of four miles a year, and may be reckoned as having in fourteen years accomplished the turning of pastureland and unoccupied prairie into gardens, for gardening is what Chinese agriculture amounts to, of a zone sixty-four miles broad and a thousand miles long.

The process will in the period of a generation or two eat up Inner Mongolia and commence upon Outer Mongolia. It is operating, too, within the rich Amur Basin, which imperial Russia .designed for her peasants' settlement. It will reach northwards as far as the Altai Mountains eventually, and promises to consume the Trans-Baikal territory as far towards the Artic as crops can be made.

For tens of centuries China has been crowded, and has had to the north and west these rich unproductive stretches to be compared to our Dakotas. Their nomad inhabitants were fierce warriors and destructive raiders, and once conquered China, and set up a reigning dynasty in Peking for one hundred and twenty years. But until the year 1906, the Chinese were unable to settle that inviting and nearby Mongolian border.

In 1905 Japan drove Russia from Southern Manchuria, and herself assumed actual suzerainty over Inner Mongolia. Under the protection thereby afforded Chinese settlers, skilled farmers from Shantung province, swarmed over the border, and successive waves of them have been doing so ever since.

The defeat and withdrawal of Russia in 1905 have been followed by the downfall of the czars, the civil war in Siberia, the farther usurpations of Japan is in Eastern Siberia in several places to-day, and is there most likely to stay in some form or other. Anyhow it looks as if all that vast and fertile Amur Basin, which seemed dedicated to white settlement, were now to be appropriated by the yellow race.

In a manner Russia's defeat at Liaoyang and Mukden, was the victory of the yellow race over the white, and it was a consequence of division in the white race. A farther consequence of further division in the white race, the war started by Germany, has confirmed the occupation, if not the title, of all that vast and valuable region to the yellow race. It looks now as if the whole virgin territory, rich in forests, minerals and potentially in agriculture, the whole area east of Lake Baikal, a veritable "Inland Empire," were lost to the white race and consigned to the yellow.

This present generation has witnessed a twenty-year period of expensive and deleterious and, finally, slaughterous wars among the nations of Christendom, whereas in the same period the yellow race has increased its hordes, extended its domains and augmented its power. The very China, which seemed moribund, and is politically bankrupt, possesses such inherent racial vitality that her people are to-day achieving the economic penetration and conquest of the Mongolias, Manchuria and the Amur Valley.

White civilization, that of Europe and America, which has been so self-confident, so resourceful, so successful, has receded before the yellow civilization by immense reaches, and is in danger of receding more. White civilization, possibly, can only regain its prestige and maintain its supremacy by consolidation of its powers. Yet, oblivious to a peril perhaps more momentous than any hitherto, the white peoples, we Americans not excepted, go on contemplating as possibilities, and hence increasing their probabilities, further destructive conflicts whose benefit solely can accrue to Asiatics.—*Minneapolis* (*Minn*) *Journal*, February 20, 1921.

Hoover on Russian Trade

THE following statement has been issued by Herbert Hoover, secretary of commerce :

The question of trade with Russia is far more a political question than an economic one so long as Russia is in control of the bolsheviki. Under their economic system, no matter how much they moderate it in name, there can be no real return to production in Russia ; and therefore, Russia will have no considerable commodities to export and, consequently, no great ability to obtain imports.

There are no export commodities in Russia to-day worth consideration except gold, platinum, and jewelry in the hands of the bolshevist government. The people are starving, cold, underclad. If they had any consumable commodities they would have used them long since.

No better indication of the destruction of production under the bolshevist system exists than in the case of flax. Pre-war Russia produced 500,000 tons of flax per annum and the country consumed 120,000 tons. The production in 1920 was about 40,000 tons—with mills and lands at least capable of spinning 120,000 tons and the population underclad. In any event, no consequential export flax is available, nor ever will be available, under this economic system.

Nor can trade with Russia under a government that repudiates private property be based on credit. Thus the whole question from a trade point of view develops into furnishing commodities equal to the gold, platinum and jewelry, variously estimated from $60,000,000 to $200,000,000, in the hands of the bolshevist government ; and after that has been expended there can be little expectation of continued trade. There has been no prohibition on trade for a long time so far as exchange of commodities is concerned. Trade is open through the Baltic States, and Italy has been trading in the South. The real blockade has been the failure of the Russians to produce anything except gold and platinum to trade with.

There has been but little trade for gold because its title has been called into question by the French government and by threats of private actions in the courts on the ground that it is stolen or subject to foreign lines. It is apparently the intention under the British trade agreement to allow this matter to be threshed out, so far as England is concerned, in the British courts. The terms of the German agreement in this particular are unknown. If any one European nation accepts the gold, no doubt all of them will.

Europe cannot recover its economic stability until Russia returns to production. Trading for this parcel of gold would not effect this remedy—nor would the goods obtained by the bolsheviki in return for it restore their production. That requires the abandonment of their present economic system.

Fire Extinguishing Without Firemen

To extinguish a fire without the aid of a fire brigade is a feat which, but a few years ago, would have received incredulous response when stated by an informer to be an accomplished fact. In the present age nothing is too marvellous for acceptance, if not as a fact, at least as something highly probable. And now there is something which does the work of a fireman. Its successful operation in 25,000 fires with an average loss to insurance companies through fire and water of about £60 has given it increasing prestige during the last twenty years ; and if its installation continues with equal rapidity, it might not be too hazardous to visualize a period wherein the bell clanging motor fire brigade will be unrepresented. This is how it is done :—

Should a fire break out in any part of a protected building, the heat at once rises to the ceiling, where the temperature is very soon raised sufficiently to melt the solder (which fuses at 155 deg. Fahr. or at a higher degree where the average temperature of the room to be protected requires it) ; the elastic valve in the sprinkler is thus released, and the water is discharged profusely over the fire. Its name is the Grinnell and Messrs. Mather & Platt, Ltd., bring it into being.

Baron K. Sumitomo, the proprietor of Sumitomo Yoko, has established a limited partnership called Sumitomo Goshi-Kaisha, and, therefore, the Sumitomo Yoko, Shanghai, have changed its name to Sumitomo Goshi-Kaisha, Shanghai, which has duly succeeded to all the rights and obligations of the Sumitomo Yoko.

FAR EASTERN IRON AND STEEL

STEEL WORKS MERGER, JAPAN.—The Oriental Steel Works at its last meeting of shareholders discussed the proposal to place the company's plant under the control of the government steel works unconditionally.

* * *

THE NIHON KOKU STEEL MANUFACTURING CO. has been organized with offices at 26 Nakanocho, Kita-ku, Osaka, to manufacture iron poles for bridges and tramlines. etc.

* * *

THE HAKEDA STEEL WORKS was organized recently for the manufacture of machines and tools. Office at 101 Ikibashi, Osaka, Tokyo.

* * *

THE FIRM AIFUJI & CO., 11 Itchome, Okazaki-cho, Tokyo, has been established for the sale of iron and other metals.

* * *

IRON WORKS AT HUPEH.—A proposal has been made for raising $5,000,000 by soliciting shares for this amount as the capital required to open the iron mine at Hsiangpishan, Hupeh, and to establish an iron foundry close to the mine.

* * *

THE TOKYO KOGYO COMPANY was organized recently with office at 37 Shinbori, Shiba-ku, Tokyo, to manufacture steel.

* * *

FRENCH TRAINING CHINESE.—Mr. Chen Lu, the Chinese minister to France, after visiting Lyons Fair, visited the great steel-works and foundries at St. Chamond, where about fifty young Chinese mechanical engineers are being trained.

* * *

ORIENTAL STEEL WORKS, JAPAN.—The president of the company has proposed to place the company's plants under the control of the government steel works for one year, beginning April 16, unconditionally. To explain why this extraordinary step was to be taken the president gave a detailed account of the company's present condition. This proposal was approved by the meeting and the court of directors was authorized to sign the agreement with the government steel works.

* * *

TAYEH IRON MINES.—At the request of the Sino-Japanese Han-yeh-ping Iron & Steel Corporation, General Wong Chan-yuan of Hupeh, has sent a telegraphic report to the Peking government concerning the erection of new furnaces at the Tayeh iron mines. General Wong says that the new foundry at Tayeh has now been completed so that its iron can be exported to Japan and other foreign countries for sale in the same way as the Han-yeh-ping product. Hence General Wong suggests the exemption of the payment of provincial taxes for five years for Tayeh iron.

* * *

AMERICAN IRON WORKS, SIBERIA (?).—An iron works under American capital will shortly be opened near Karimskaya Station, says a report from Harbin.

* * *

JAPANESE MINERAL RESOURCES.—Some time ago the Japanese government constituted a committee to study the future development of the mineral production of the country. This committee has now reported, and estimates that in 1924 Japan will produce 492,000 tons of iron, 1,287,000 tons of steel, 7,773,000 tons of coal and 4,786,000 tons of iron ore. The committee considers that the best policy to follow is the grouping of the various works, and the levying of protective duties, ranging from 10 per cent. *ad valorem* on iron ore to 15 per cent. for steel, material for ship construction remaining free as at present. The builders of ships using native steel would receive a subsidy equivalent to the import duty. Other proposals are that the government should utilize as far as possible native iron and steel; that the government, where necessary, should give special facilities for the transport of material used in the manufacture of steel; that the regulations governing the electric manufacture of steel should be revised to the advantage of the industry; that the government should afford financial support to the steel industry; that mechanical equipment and scientific education should be developed; and that the Japanese steel works erected in Manchuria should enjoy advantages similar to those enjoyed by the indigenous industry.

JAPANESE GOVERNMENT STEEL WORKS.—The government iron foundry, at Yawata, has been forced to reduce its standard prices on all products, but present quotations are not down to the level of the market. The reductions do not, therefore, produce a noticeable effect on either sales or consumption. This foundry now has stocks on hand of about 70,000 tons for military and naval purposes and 300,000 tons for commercial use. In view of this large stock and the fact that the government was asked to advance Y. 300,000 as a relief measure, it is feared by some of the independent dealers that the government's stocks will be sacrificed. This view is not generally considered probable. The Kure Naval Arsenal made contracts during the month of January for a total of 5,000 tons of British pig iron. The entire amount was supplied by three Japanese companies, who furnished the material in the following quantities and prices: 1,500 tons at Y. 155 per ton; 1,000 tons at Y. 156.09; and 2,500 tons at Y. 157.87.

* * *

SHIPBUILDING, HONGKONG.—The economic resources committee's report on the shipbuilding industry goes to prove that Hongkong is capable of building any type of merchant ship as cheaply as, and possibly cheaper than, any other country, Japan included. If a supply of coal from near-by provinces can be guaranteed, the question of the establishment of rolling-mills is purely a matter of time, adds the report.

* * *

NEW BLAST FURNACE.—The installation of a new furnace at the Hankow plant of the Yangtsze Engineering Works has been completed.

* * *

THE IRON, STEEL AND SHIPBUILDING IN JAPAN.—The recent report of the financial and economic committee appointed by the Japanese government gives the following forecast of the production for the years mentioned, and of the coal and iron ore required under peace conditions :—

Estimatel Iron and Steel Production.

	Pig-iron. Tons.	Steel. Tons.
1920	377,616	1,031,550
1921	468,000	1,099,000
1922	437,000	1,164,000
1923	466,000	1,227,000
1924	492,000	1,287,000

Coal and Iron Ore Required.

	Coal. Tons.	Iron Ore Tons.
1920	6,040,000	3,709,000
1921	6,473,000	3,978,000
1922	6,926,000	4,275,000
1923	7,339,000	4,517,000
1924	7,733,000	4,786,000

Previous official figures taken from the report of the economic investigation committee created at the time of the Okuma ministry gave the annual production of pig-iron for 1920 and 1921 at 100,000 tons for Korea, 230,000 tons for Manchuria, and 480,000 tons for China. For steel the figures for Manchuria and China were 120,000 and 60,000 tons respectively.

The current report previously referred to states that the best means of developing the iron industry would be the amalgamation of all the groups of works concerned, and that protective duties are necessary for safeguarding the industry.

With regard to the shipbuilding industry, the committee recommend that it should be supported for reasons of national defence and of economic and industrial necessity, and their proposals take the following form:—In view of the great development which has taken place in shipbuilding since the outbreak of the war, the direct protection provided by the law concerning the promotion of shipbuilding is no longer advisable; and the grant of subsidies for increasing the sale of ships to other countries is also considered to be no longer necessary. The import duties on steel and wood required for the construction or repair of ships must be abolished in order to facilitate the acquisition of such materials by shipbuilders, and thus strengthen their position in relation to foreign shipbuilders. Exemptions from duties are also to be made on imports of equipment, fittings, machinery, etc., which can only be produced with difficulty in Japan. Shipbuilding itself to be further promoted, should the occasion arise, by the payment of subsidies. The import duties on ships built abroad and sold to Japan must remain in force. Facilities should be provided for the grant of long-term loans and for rendering available the necessary amounts for increasing the subsidies paid. The organization of a special experimental establishment for shipbuilding is considered indispensable.

The South Manchurian Railway has under contemplation a scheme for the production of iron and steel on a large scale, in addition to the pig-iron which it manufactures already. The company's daily output of pig-iron amounts to some 300 tons, and the accumulated stock to about 50,000 tons.

Engineering, Financial, Industrial and Commercial News

AVIATION

High Cost of Flying.—The Paris correspondent of a London financial paper states that China is to place a loan for 500,000,000 f. at 8 per cent. in Paris. Three-fifths of the total (300,000,000 f.) is to remain in France in payment for aviation material.

Aviation School, Japan.—A new aviation school is being established at the Amihara aviation ground, Kasumi Lake, Iboraki prefecture, at which the twenty new British aerial instructors will commence their work.

Hydro-planes on Upper Yangtze.—A scheme is being launched to start a hydro-plane service between Ichang and Szechuan ports.

Some time ago a hydro-plane was tried at Nantao by a returned student from France, who will use the same machine in an attempt to make a flight on the Yangtze River between Ichang and Chengtu. The machine is a French 1916 type, and is capable of flying 140 li an hour or from Ichang to Chungking in ten hours. Thirty passengers and mails can be carried on each trip, the expense of which will about $700. Each passenger will be charged $60 per trip and this together with mail carrying fee is expected to bring in profits which will in a short time repay the cost of the machine, $30,000.

Should the scheme prove to be successful, it will greatly facilitate traffic and other communications between Ichang and towns in the interior of Szechuan, and will prove a great convenience to everybody concerned.

Long Distance Flight in China.—With the aquiescence of the Chinese government, the war Office has decided to carry out in early May a long-distance flight between Tokio and Changchun, covering the distance of 1,600 miles.

Trans-Pacific Flight.—The proposed trans-Pacific aerial flight contemplated by the American naval office, which is attracting great attention in the world, will be carried into effect during the coming summer. Twenty-three large machines will be used. It is understood that the American naval authorities will place eight torpedo-depot ships on the ocean, one every hundred miles, to look after the safety of the aviators. The 23 aeroplanes will start together, and proceed to Hawaii first.

Passenger Flights, Peking.—Under the auspices of the bureau of commercial aviation of the air department, air touring over Peking has been inaugurated. The planes used are the ten-passenger commercial vimy, piloted by Major Patterson, an extra charge will be demanded for the privilege of riding in the cockpit with the pilot. Twenty dollars is the price for a ride over Peking lasting about a half-an-hour, while only half as much is asked for local flights. Five dollars is the amount that must be paid for the pleasure of riding beside the pilot.

The Nanyuan aerodrome, which has been especially fitted up for the purpose of commercial flying, is some six miles to the south of the Yuen Ding Men. There is a rough road to the field, and there is now a restaurant for the refreshment of the passengers.

Flights take place three times a week, on Tuesday, Thursday and Saturday, with three flights a day. The flying begin at 2 p.m., with three flights at intervals of half an hour, the Peking trips beginning at two and two thirty, and the local trip at three.

British Aviation Experts to Japan.—At the invitation of the Japanese government Mr. Oswald Short, the pioneer airman, has left England for Japan, and a number of *employes* of Messrs. Short Bros., seapleane builders, have also left for Japan to assist in carrying out a contract with the Japanese government. They are travelling with a large cargo of seaplanes. Further, some ten British civilian pilots and aeronautical engineers, headed by colonel the master of Sempill, will leave in about two months for Japan to instruct Japanese Navy pilots and engineers.

Aviation School, Amoy.—It is reported that several Chinese overseas are planning with certain American capitalists to found an aviation school at Amoy, Fukien, to train Chinese mechanics. Foreign instructors will be engaged.

The first Airship for Japan.—Airship ordered by the Japanese navy arrived from England in April. It is equipped with two motors and can make a speed of 60 miles per hour carrying five passengers.

AUTOMOBILES

Proposed Motor-bus Services, Kowloon.—The Vehicles and Traffic Regulation Ordinance of Kowloon contemplate a service of not less than 15 motor vehicles, each having a carrying capacity of 19 adult persons, including the driver and conductor—two front rows to be reserved for first class, and the remainder for second class passengers. Four routes are specified: (1) Kowloon Ferry to Shamsuipo; (2) Hunghom to Kowloon Ferry; (3) Hunghom to Shamsuipo; (4) Hunghom to Kowloon city.

Nakaya Automobile Company of Shikoku, Japan, recently inaugurated a new service between Ikeda and Kawanoye to connect with the main line railway trains.

BRIDGES

Bridge Construction at Hakone.—In the reconstruction of the Sakawa bridge at Hakone Y.238,000 will be expended.

New Bridges, Tokyo.—A scheme at an estimated cost of Y.1,400,000 is planned by the municipality of Tokyo for the construction of a thousand bridges. Three hundred of the bridges now of wood are to be replaced by iron-framed structures.

Arakawa River Bridge.—A bridge is being built over the Arakawa River on the Tokyo-Marita Tram line at a cost of Y.600,000.

Hangchow-Ningpo Railway Bridge.—The German firm, Diederichsen & Jebsen, had a contract with the Shanghai-Hangchow-Ningpo Railway for the construction of a bridge at the Tsao-o-kiang River. It is now decided by the railway authorities to cancel the contract owing to its non-fulfilment in consequence of the war and the contract will be taken by a British firm.

BUILDINGS

Tokyo Woman's University, presided over by Dr. Niitobe is receiving funds from the United States for the erection of a new building. Y.1,200,000 has been donated to date and land near Enokashira has been purchased for Y.250,000. Building will be commenced this autumn.

New Housing Scheme, Osaka.—One million yen have been borrowed from Osaka city authorities by the Kitaminato Land Co. for the purpose of erecting 445 new houses in the neighborhood of Seiseh-ji River, Osaka. Y.1,300,000 will also be spent on building 650 houses at Suginami Mura.

New Scientific Laboratory to be built at a cost of Y.1,000,000, has been decided by a group of Tokyo professors.

New Schools, Japan.—A new girls' school will be built in Osaka during this year at a cost of Y.218,487. The sum of Y.13,500 will be expended in enlarging the Wakanoura School building.

New Engineering College, Tokyo.—A new building on which Y.1,500,000 will be expended will be erected by the Tokyo imperial university in which to train and produce engineers.

New Hotel, Tokyo.—The Toyo Kisen Kaisha plans to erect a large hotel in front of the central station at Tokyo. Y.10,000,000 will be appropriated for the purpose.

New Building, Osaka.—The Osaka communication bureau will construct a new building at It-chome, Tamai-cho, Kita-ku, Osaka.

New Band Stand, Yokohama.—An expenditure of Y.70,000 has been decided upon by officials and leading citizens of Yokohama for the construction of a new band stand for the Yokohama Park. A concert given a week ago under the auspices of the newly organized musical society netted more than Y.3,500 for the new enterprise.

Tokyo Peace Exhibition to be held in Tokyo during March of next year, will be the largest exhibition of its kind ever held in Japan, according to the plans now being formed under the direction of Dr. Sano, who is in charge of the construction of the buildings.

The exhibition grounds will cover two blocks. The first of these covers 50,000 *tsubo,* which will include halls for educational, agricultural, electrical, forestry, chemical, industrial, dyeing, fine arts and botanical exhibits. The entrance will be through a large decorated arch, 120-ft. high.

The second block covers 60,000 *tsubo,* with the Shinobazu pond as the centre. The Colony Hall, bandstand, halls for foreign products provisions, aquatic products, stock breeding, horticultural, mechanic, aviation and communication exhibits will fill the ground. The pond will be beautified with electric lamps and poles.

Special cable cars will connect the two blocks of the exposition grounds.

Central Railway Station, Peking.—A central union railway station is to be built in Peking at a total cost of $3,000,000, under the direction of the engineer-in-chief of the Peking-Hankow Railway. It will be located on a site east of the Temple of Heaven. When built there will be through connection between Hankow and all Chinese railway stations in the north.

Provincial Exhibition, Nanking.—For the purpose of arousing public interest in industry the provincial government of Kiangsu is preparing to hold an exhibition in Nanking of the commercial products of the sixty districts of Kiangsu on the 10th of October, 1921.—*Chinese press report.*

CONSTRUCTION

Yawada & Co.—Construction engineers have established offices at 12 Nichome, Hama-cho, Nihonbashi-ku, Tokyo.

Railway Wharf, Hanyang.—The Peking-Hankow Railway proposes to build a wharf at Hanyang, The Hanyang arsenal has lodged a protest as the wharf will affect the tide and cause damage to the property of the arsenal.

The Shinsei-Gumi was organized recently with office at 21 Honga, Nakano-machi, Tokyo-fu, as construction engineers.

The One-Gumi has been established at 18 Sanchome, Senju Machi, Tokyo, for the purpose of engaging in construction work.

Mew Lighthouses, Japan.—A new lighthouse will be constructed at Kojima, Toshima province, at a cost of Y. 125,000 and another at Bono Misaki in Satsuma province at a cost of Y. 68,000.

COMMERCIAL FINANCE

Vladivostok Timber Concessions.—Mr. Kojevnikoff, vice-minister of foreign affairs, is negotiating a contract with a group of Vladivostok merchants for the timber concessions south of the Imperial Wharf, covering an area of approximately 1,000,000 desatinas (3,000,000 acres).

The Cotton Yarn and Cloth Exchange, Shanghai, established lately by Chinese merchants, has increased its capital from $2,500,000 to $3,000,000.

Commercial and Industrial Bank of Italy.—Branch was opened in the Italian concession, Tientsin, recently. The bank's head office is at Rome, with Signor Garibaldi as director. Branches are expected to be shortly established in the British concession, Tientsin, and at Peking. It is said that on the day of opening a sum of over Tls. 200,000 was deposited.

T. K. K. Debentures.—The Toyo Kisen Kaisha has decided to issue more debentures as underwritten by the Yasuda Bank soon to the extent of Y. 7,000,000. The new issue carries interest of 8 per cent. per annum, but it is offered at par. The new issue will be refunded in three years, beginning 1923.

Pawn Shop Bank, Hangchow.—A bank capitalized at $1,000,000 with head office at Hangchow and branches at Kashing and Huchow is being organized by the pawnshop keepers of Hangchow, Kashing and Huchow. The bank will be opened as soon as three-tenths of the total capital is collected.

Commercial Silk Bank, Shanghai.—A bank is being organized by the silk manufacturers of Kiangsu and Chekiang. Mr. Y. S. King and several others, at Shanghai, with branches at Hangchow, Kashing and Huchow, with a capital of $2,000,000, to be divided into 20,000 shares at $100 each. This bank will transact a banking business within the scope of the silk trade.

Branch of Weihai Industrial Bank.—The Weihai Industrial Bank of Nantungchow, established by Mr. Chang Chien in 1920, having a total capital of $1,000,000, has up to the present, four branches located at Shanghai, Tongsha, Tungker and Yanchow. The fifth branch was opened at Haimen on April 24, 1921. The organization of branches at Chinkiang, Soochow, Yienchen and Hsukao is also under way.

A New Bank in Shanghai.—On April 21, 1921, an industrial bank, capitalized at $500,000 named Ho Hai Industrial Bank, or Shanghai Industrial Bank, was inaugurated at Shanghai.

New Banks at Soochow.—Besides the banks already existing here, one new bank has been lately established and four more are under organization.—*Chinese Press Report.*

Agricultural and Labor Bank, Hangchow.—The Agricultural and Labor Bank of Hangchow started business as a joint enterprise of officials and merchants, with a capital of $200,000 to be subscribed by officials and merchants in equal shares. At the last conference of the shareholders, a decision was reached to run the bank solely upon the capitalization and under the management of merchants. Sanction has been granted by the provincial government of Chekiang.

Amalgamation of Companies, Japan.—The amalgamation of companies has been very frequent in Japan of late. The Tokyo Muslin Company held at its offices an extraordinary general meeting of shareholders on March 23, when a decision was unanimously reached to amalgamate with the Tokyo Calico Company. The capital of the company after amalgamation amounts to 15 million yen, ten million yen of which being paid-up.

The Kinugawa Hydraulic Company has also amalgamated with its sister company, Kinugawa Kogyo Kaisha (the Kinu River Industrial Company). The capital of the amalgamated company is 45 million yen.

Chinese Banks' Profits.—The native banks in Peking did an excellent business last year, some making net profits that exceeded their capital. The greater part of their investments was government short term loans. It is because the banks have been doing so profitable a business that so many new banking institutions have been established in the last few months, for the rate of interest charged the government varies between 15 and 30 per cent. The following speaks for itself :—

Name of Bank	Net Profit	Paid to Members for $1.00
Tunglu	$ 750,000	$6.50
Hsinhua Savings	700,000	2.60
Talu	450,000	2.80
Hsinheng	650,000	2.70
Wuchu (Five races) ...	150,000	1.50
Tasung	250,000	2.80
Nengkung	150,000	2.50
Minghua	250,000	2.80
Chihchung	150,000	1.30
Paoshang	200,000	1.70
Yenyeh (Salt)	1,300,000	4.50
China	4,500,000	—
Communications	2,500,000	—

In the case of the last two banks the amount to be paid to members awaits the decision of the shareholders.

Not one of the banks operated at a loss. Each member of the staff received a bonus of one-third of his annual salary at least and in the case of the Tunglu bank, which paid the biggest, a clerk or cashier drawing $1,200 a year got $7,800 additional at the end of the year.

The Li Chung Company.—When Messrs. Tsao Ju-lin and Lu Chung-yu resigned, it is reported that Japanese capitalists negotiated with them for the organization of a Sino-Japanese Trading Corporation with a capital of $5,000,000, to be called the Li Chung Company. Messrs. Tsao and Lu were to subscribe a sum of $2,500,000, and control the enterprise, but on account of some disagreement, there was a deadlock. After the fall of the Anfu party, some of the prominent Anfuists opened negotiations with the above Japanese capitalists again. There was a deposit of $200,000 in a certain bank, and these Anfuists decided to cash it for capital to start the enterprise. But to their surprise they were informed by this bank that the amount was confiscated. Accordingly they failed, and since then the Japanese capitalists have again approached another party of Chinese for the promotion of the same enterprise. Finally they have succeeded in getting men of various parties interested in the matter, hence the present organization of the Li Chung Company. Through the compradore of Messrs. Mitsui & Co., Mr. Li, the Li Chung Company is doing good business in the capital. The date for the repayment of the government printing and engraving bureau loan, wireless telegraph loan, etc., is due, and Mr. Li has introduced officials to this new Sino-Japanese corporation. Efforts are also being made to secure orders for this corporation to purchase locomotives and other railway supplies for the government.—"*New Society*"

ELECTRICAL

The Fuji Water Power Company has decided to float a new loan to the extent of Y.5,000,000. It is expected that it will be underwritten by a subsidiary of the Yasuda Bank.

Electrical Combine, Japan.—A big company formed by the amalgamation of the Hiroshima Electric Light Company and the Kure Electric Power Co., will probably operate with a capital of Y.25,000,000.

The Amagasaki Electric Manufacturing Co. was established recently to produce electrical machines and tools. Office at 22 Umemoto-cho Nishi-ku, Osaka.

Pootung Electric Light.—The Pootung Electric Supply Co. has nearly completed installing its second plant. The main line, from Tungkadoo northward to Yangking village, covers a distance of about eight miles.

Negotiations for installations or connections are also being carried on with many large factories and wharves in Pootung.

At the recent shareholders' meeting, Mr. S. H. Dong, general manager, moved a resolution to increase the capital by $100,000 for extension purposes, which was duly passed.

The Nochi Electric Company, with a capital of Y.3,000,000, expects to generate large electrical power. Its horse power capacity will be 5,548 and electric power 3,400 kilowats.

New Electrical Company, Japan.—Hirano & Co. was organized recently at 60 Sanchome, Kyabashi, Higashi-ku, Osaka, for sale and manufacture of electrical supplies.

Electric Lights Installed.—Almost all cities and towns in Japan have now electric light installed and the city of Tokyo has 2,617,886 lamps installed, the average candle-power being 14.4. Osaka comes next in order, the lamps installed numbering 1,520,641 and the average candle-power 16.9. Saghalein has 12,883 lamps installed, the number being the smallest as compared with other prefectures. As to the average candle-power, Formosa stands first in the list, Osaka, Kyoto, Saghalein, Fukuoka, Tokyo, and Kumamoto coming next in order. The following are the number of electric lights installed and the average candle-power in some leading prefectures :—

	No. of lamps installed	Average candle-power
Tokyo	2,617,886	14.4
Osaka	1,520,641	16.9
Fukuoka	659,887	14.7
Kyoto	565,174	15.5
Kumamoto ...	245,215	14.3
Formosa	205,921	19.5
Saghalein	12,883	15.1

Omsk Electricity Works.—The Omsk provincial executive committee has organized a subcommittee to take charge of electrification of the province. The immediate program of the subcommittee is to utilize the small electric stations.

Pukow Electric Project.—The Tientsin-Pukow Railway has decided to instal an electrical plant at a cost of $900,000 at Pukow.

It was at first intended to put up the plant at Pu Chen, one station to the north of Pukow, where is situated a big railway work-shop which has recently been enlarged. Later it was considered inadvisable to instal it at Pu Chen in view of insufficiency of water-supply.

The ministry of communications has approved the suggestion of the Tientsin-Pukow Railway administration to have the plant built at Pukow where there is ample water-supply and to have the current transmitted to Pu Chen by 6,600 volts wire.

The plant will be completely installed in two years' time and it will have a maximum power of 3,000 K.W. Before its completion, one 1,000-K.W. steam turbine will be purchased to supply current for the immediate need of the Pu Chen workshop and another steam engine of 200 K.W. for lighting the town and the station at Pukow.

The cost of the whole plant is estimated at $900,000 which will be provided in two equal portions in the administration's budget for the coming two years.

(The contract for this plant was recently placed through Jardine, Matheson & Co., with the English Electric Company, Ltd.—Ed.)

Hangchow Electric Light Co.—The profits of the Da Yu Li Electicr Light Co., Hangchow,

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for 1920 amount to $525,746, showing an increase of $127,000, as compared with the figure for 1919, and indicating a net profit of $228,539.

Hydro Electric Plant, Peking.—A Peking merchant, Mr. Yu, is planning to form a company in Peking to supply electricity for the consumption of Peking and Tientsin by utilizing the water power of the Yungting River at Wounping and Weilai.

Electric Light, Kaoyue.—An electric light company is being organized by local wealthy merchants, Mr. K. S. Liu and others, at Kaoyue, Kiangsu, a small city situated to the north of Yangtze River and on the eastern bank of the grand canal, at a total capital of $40,000.

Two New Electric Light Companies, Chekiang.—Electric light plants at Po-yuen-chen, Kashing, and Jui-an, of Wenchow, Chekiang, are being established by local wealthy merchants, and are expected to operate soon. The machinery was purchased in Shanghai.

Japanese Electric Combines.—Tokyo will in future be a field of keen competition among several companies for the supply of electric power and lighting. In addition to the fairly numerous existing companies, the Keihin Electric Power Company, the Kanto Water Power Electric Company, and the Gumma Electric Power Company are now being organized. The aggregate supplying capacity of the latter and of the companies already in existence will soon far exceed the demand for the entire city and neighborhood, and the question of regulating supply and demand is being considered by the respective companies as a matter of grave importance. It is probable that some companies will eventually combine in order to avoid competition.

The Tokyo Electric Light Company amalgamated with the Nippon Electric Light Company some time ago, and more recently with the Tone Water Power Electric Company. It is now about to amalgamate with the Tone Electric Power Company, the negotiations for the operation having now been concluded. In addition, the Tokyo Electric Light Company, being a large shareholder in the Shinetsu Electric Power Company, controls a large supply of electricity from that source. The Shinetsu Electric Power Company has recently amalgamated with the Nakatsugawa Water Power Company, which will shortly begin its power-house operations; consequently the supplying capacity of the Shinetsu company is expected to increase considerably in the near future. In these circumstances the Tokyo Electric Light Company possesses a paramount position in the supply of electricity in Tokyo and the neighborhood.

Hydro-electric Combination, Japan.—A new attempt at combining water power enterprises in Miyazaki prefecture is made by business interests in Kyushu and Osaka. It is promoting a plan to float a new joint stock company capitalized at Y.20,000,000, which is made to take over all enterprises there which are now in existence or construction.

Medical Electrical Apparatus Company, Ltd.—Has been organized with a capital of Y. 100,000 quarter paid up to manufacture electrical apparatus for hospitals. Office, 1 Izumicho, Kanda-ku, Tokyo. Manager, K. Takata.

Electric Tramway Project, Changsha.—An electric tramway between Siangtan and Changsha, a distance of 30 miles, is being mooted by the gentry of Hunan. It is proposed to utilize the existing military road between the two cities to save cost of grading. The country is flat and construction comparatively easy.

Nogami Company, Ltd.—Has been organized with a capital of Yen 1,000,000, quarter paid-up, to manufacture electric machines and appliances and to contract for general construction work. Offices, 47 Sanchome, Kitahama, Osaka. Managing Director, K. Nogami.

Kaifu Hydro-Electric Company, Ltd.—Is a new enterprise in process of organization to operate in Tokushima prefecture, Shikoku Island, Japan. The president of the new company will be Mr. Genjiro Yuki. Plans for a power house and transmission line are now being drawn.

Meiji Electric Company.—Has been organized as a partnership to engage in the sale of electric material. Offices, 86 Minami Sakaigawa-machi, Nishi-ku, Osaka. Manager, Jiro Taneshima.

Tsuda Electric Meter Company.—Was organized recently as a limited partnership to manufacture electric meters. Offices, 183 Sangenya Kamino-machi, Nishi-ku, Osaka. Manager, Z. Tsuda.

The Yawata Mfg. Co., Ltd.,—Has been organized with a capital of Y. 120,000, quarter paid up, for the manufacture of electrical machines and tools. Office, 1583 Omori-machi, Tokyo-fu. Manager, T. Fujiya.

GOVERNMENT FINANCE

Far Eastern Republic.—Needs a loan of $250,000,000 in instalments, spread over several years, partly in cash for government purposes, but mostly in agricultural machinery and railroad supplies, which would be purchased in the country furnishing the credit. The Far Eastern republic offers as guarantee, the government's share in the royalties of concessions, of all the natural resources of the country.

The Hankow Loan.—Representatives of Messrs. Samuel & Company are in Peking negotiating with the ministry of agriculture and commerce for a loan agreement under the terms of which a new commercial market is to be established at Hankow. The only thing that prevents the agreement from being made effective at once, it is understood, is the rate of interest to be applied. The ministry of finance, so it is understood, has already made a preliminary payment of Tls. 8,520, representing the interest due to the Bank of China through loan advances, and it appears that the formal agreement for the new project will be signed this week.

Wine and Tobacco Bank.—The wine and tobacco bureau will shortly establish a bank to be known as the Wine and Tobacco Bank with a capital

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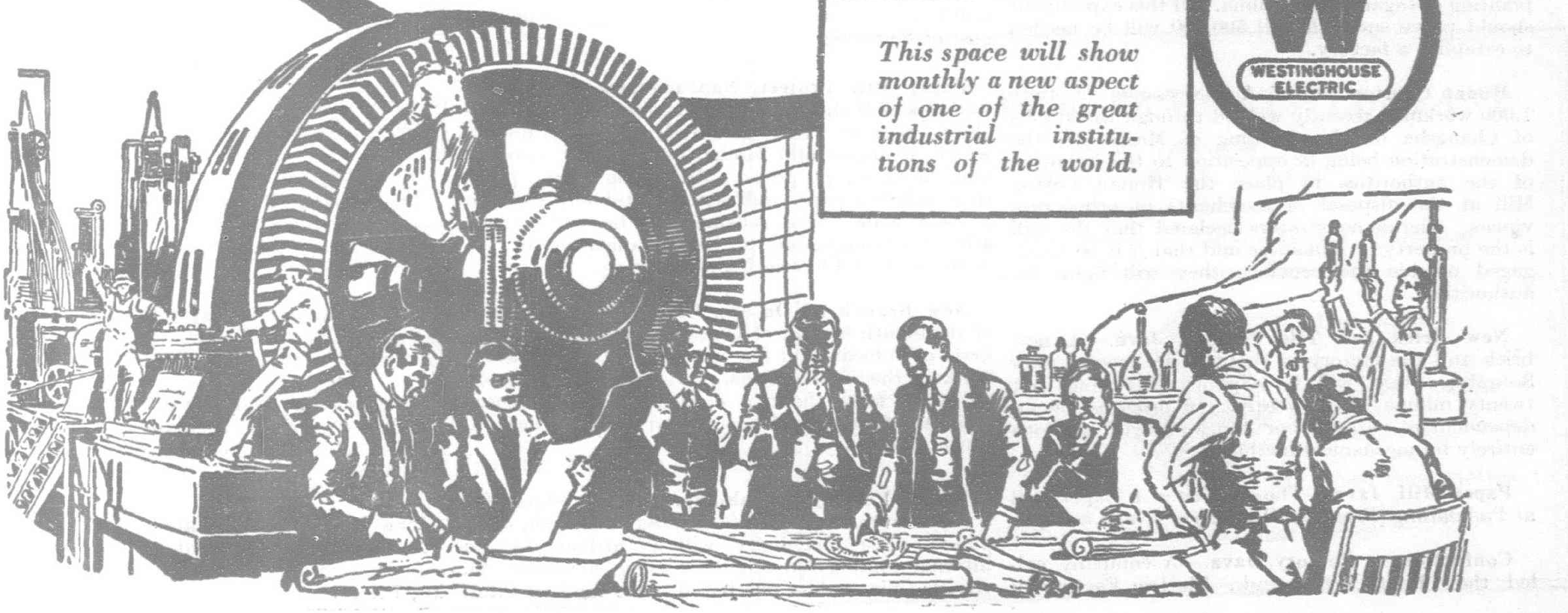

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of $10,000,000, half to be subscribed by the government and the other half to be open for public subscription. Mr. Chang Show-ling is the promoter of the scheme. The director of the bank will be elected by the shareholders.

Boxer Indemnity Fund.—The boxer indemnity fund due to be paid next year is as follows: Great Britain £11,000,000; United States $36,000,000; France 390,000,000 francs: Japan, £7,600,000, Italy, 100,400,000 francs: Belgium, Portugal, Spain, Holland, Sweden, Norway, etc., 50,000,000 francs. The government is negotiating with the foreign legations the appropriation of half of the stipulated sums as an educational endowment fund.

INDUSTRIES

Ishikawa Shoten was organized recently as a limited partnership for the sale of metals. Offices, 16 Sanchome, Honzaimoku-cho, Kyobashi-ku, Tokyo.

Morino Shoten is a new concern established for the sale of metals. Office, 6 Gochome, Nishinagobori, Nishi-ku, Osaka. Manager, O. Morino.

Canton Manual Training School.—There will soon be a school for the training of skilled machinists. It will give training in the elementary branches of mechanics and as the sessions are to be held at night, it will afford opportunity to those now occupied in different branches of unskilled labor to acquire knowledge which may benefit them in seeking a better livelihood.

Brick, Tile and Cement Project.—A cement, brick and tile plant will be established at a suitable location in the Ta Hu Lake region as a result of the proposed lake improvement scheme now being carried forward under a commission headed by C. T. Wang.

Industrial Development in China.—According to investigations recently made, the number of factories throughout China stood at 19,321,478 of which carrying on the work by means of motive power. The largest number of factories is situated in Chekiang province, the total reaching 2,500 and Chihli province comes next with 2,267 factories. There are 2,398 cotton cloth factories, paper mills 2,327, oil factories 1,496 and sake factories 1,668. The minimum wage of workmen is 5 cents and the maximum wage 62 cents on an average per day.

Aerated Water Factory, Hangchow. — An aerated water factory is shortly to be established in Hangchow near the West Lake with a capital of $50,000.

Sugar Factory, Shanghai.—A sugar factory will shortly be established in Shanghai by Chinese returned merchants from Formosa. The owners of the Hsing An Sugar Factory in Formosa have already raised $500,000 for the experimental planting of sugar cane in China. If this experiment should prove successful $1,500,000 will be needed to establish a factory.

Hunan Cotton Mill.—A procession of fully 1,000 workmen recently walked through the streets of Changsha on the morning of March 21, the demonstration being in opposition to the intention of the authorities to place the Hunan Cotton Mill at the disposal of merchants of other provinces. The demonstrators declared that the mill is the property of Hunanese and that if it be mortgaged outside the province they will fight the authorities.

New Brick and Tile Factory, Java.—A new brick and tile factory is about to be erected near Sourabaya that will be capable of turning out twenty million bricks yearly. In order to be independent of native labor the work will be done entirely by mechanical methods.

Paper Mill, Java.—The erection of a paper mill at Padalarang (Preanger Regencies) is now assured.

Confectionery Factory, Java.—A company called the "First Neth., Ind., Electric Factory of Confectionery" has been organized at Bandung, with the object of opening a confectionery and sweetmeat business there.

Kwangsun Oil Mill, Nantungchow, established in 1903, with a capital of Tls. 300,000, yields more than thirty thousand piculs of cotton oil and more than twenty thousand piculs of cotton oil cake, valued at about $500,000. A German chemist is in charge of refining the oil.

Nantungchow Industrial Notes.—The Fo Sin Flour Company, of Nantungchow, established by Mr. Chang Chien, has increased its capital from $140,000 to $350,000. This mill has an annual output of 650,000 bags of flour and 113,000 bags of corn meal valued at $1,900,000. The net profit of the company in 1920 is reported to be $130,000.

The Da Sun Weaving and Spinning Company Nantungchow founded by Mr. Chang Chien in 1905, with a capital of $2,050,000, is operating 65,380 spindles and 480 looms, and employing 5,500 workers. The annual producing capacity of the company is 47,000 bales of yarn valued at $200 per bale and 130,000 pieces of cloth valued at $14 each piece. The net profit of the company in 1920 totals Tls. 2,000,000, 14,000 new spindles and 300 power looms are being added.

Industries at Woosung.—Two large cotton weaving and spinning mills will soon commence operations at Woosung. The first, or Da Chung Hua Mill, capitalized at Tls. 2,000,000, will operate with 42,000 spindles, and full equipment of modern machinery ordered from England. Boilers, motors and 12,000 spindles have been shipped, and the factory is expected to start operation with 12,000 spindles in August of this year. The company will also establish a dyeing factory as one of its departments, also an electricity supply company at a capital of Tls. 400,000.

New Industries for Shanghai.—Mr. Y. S. Ma, owner of the M. Y. San Confectionery Company of Shanghai, and Mr. Chang Chien, of Nantungchow, plan to establish five large factories in Shanghai for making biscuits, confectionery, glass, machinery and sugar. The capital of the enterprise will be $15,000,000. A lot of land 200 *mow* in area at Yi-chow-tang along the Whangpoo River has been purchased for factory sites. Mr. Ma is proceeding to Foochow, Amoy, Swatao, Hongkong and other places, to invite share subscriptions. When $10,000,000 is subscribed the company will be organized.

Yangtze-chang Industries.—Yangtze-chang is a small village situated on the Whangpoo River south-west of Shanghai. Many modern industrial enterprises have been founded in this small village by Mr. H. C. Mo.

There is a large ginning plant operating 80 hand and 30 power gins, and a yarn mill capitalized at Tls. 600,000, equipped with 10,200 spindles, and employing 700 workers. A bank is being organized with a capital of $500,000. Communication facilities are not good and Mr. Mo has determined to build a 70-li automobile road at an estimated cost of $300,000.

Paper Mill Project, Nantungchow.—According to a report of the chamber of commerce, Nantungchow, requires four hundred thousand dollars worth of native and foreign paper every year for manufacturing purposes. Mr. Chang Chien plans to establish a paper mill with capital derived from a local loan. This scheme will be carried out after the completion of the organization of the Nantungchow Electric Light Company.

New Branch of Da Sun Cotton Mill.—The site of the eighth branch of Da Sun Cotton Mill was at first to be located at Sze-yang-pa, on the southern bank of the Grand Canal, but, owing to being too far away from the new electric light and power plant the factory will be situated at Han-hsian-pa, south of the city.

Match Factory, Chinkiang.—The buildings for a new match factory in Chinkiang have been completed. The machinery will be driven by an internal combustion engines, using kerosene oil. A rich Chinese has purchased some land in Chinkiang and intends to clear it off and erect another match factory there.

New Factory Schemes, China.—The Peking government recently circulated a telegram instructing the provincial authorities to devise measures and secure funds locally to establish as many factories as possible to provide employment to soldiers, so they will not be compelled to turn brigands when the projected scheme of disbandment is put into execution.

S.M.R. Industrial Budget.—The South Manchurian Railway Company's industrial activities for the year 1921, will cost Y.75,960,000, which, compared with last year's expenses, shows a saving of Y.44,000,000.

New Cotton Mill, Shanghai.—It is reported that Tuchun Meng En-yuan, of Kirin, General Li Hsing, brother of the late Tuchun Li Shun, and others, have raised about $1,000,000 for the establishment of a cotton mill in Shanghai. A deputy has arrived here to purchase a suitable site and order machinery. A contract for the purchase of machines has been signed and plans are being drawn up for the buildings.

New Soap Factory, Ningpo.—A new soap factory is to be established at the Heidzaomen by Ningpo merchants with a capital of $20,000.

Woollen Mill for China.—It is reported that the American Woollen Company will build a factory for the making of woollen cloth either in Japan or China.

The proposed factory will be built in the Far East to escape the high wages paid labor in the United States. At present the firm is doubtful which of the two countries will furnish the best location, but China is thought to have a slight advantage over Japan. The wages in China are lower than in Japan, but the tariff on imported wool in China is higher than here. This necessitates a thorough investigation by the company's representative.

The American Woollen Company is said to control most of the wool produced in Australia and the Far Eastern factory will be built to convert this into cloth. There is as yet no indication of the city in which the factory will be located in case it is built in Japan.

It is understood that the company plans the expenditure of several million dollars in building the plant, all capital to be furnished from America. The American Woollen Company is capitalized at a hundred million dollars. According to its financial statement for 1920 the profit amounted to $6,855,259 and the surplus was $31,508,732.—*Japan Advertiser.*

The Watanabe Co. was recently established as machine and tool manufacturers at 7 Shintanimachi, Osakakusa, Tokyo.

The Kawahara Iron Works was organized recently to manufacture machines and tools. Office at 805 Minamisokai, Gawamachi, Nishi-ku. Osaka.

The Masumoto Iron Works was organized recently with office at 83 Nichome, Honda Machi. Nishi-ku, Osaka, for the manufacture of machine tools.

The Tokyo Glass Industrial Co., **Ltd.** was recently organized with a capital of Y.100,000 to manufacture glass. Office, 13 Uneme-cho, Kyobo-shi-ku, Tokyo.

The Nakamura Industry Co. has been organized at 10 Itchome, Tokiwa-sho Fukagawa, Tokyo for the manufacture of machinery.

The Haneda Belt Manufacturing Co., capital Y.1,000,000, has been established to manufacture leather belting. Offices, 13 Satode-machi, Honjo-ku, Tokyo.

The Japan Tile Manufacturing Co., capital of Y.1,000,000, quarter paid up, will commence work shortly with offices at 23 Kamakura-gashi, Kanda-ku, Tokyo.

The Takaoka Manufacturing Co. offices, 54 Nichome, Yanagawara-cho, Honjo-ku, Tokyo, will make machinery and equipment for chemical factories.

The Tokyo Bosai Industrial Co. has been established with offices at 9 Michome, Kyobashi-ku, Tokyo, to manufacture machine tools.

The Kanto Kako (Chemical Industry Co., Ltd.) was organized recently with a capital of Y.70,000, with office at 538 Irugi-bashi, Tokyo, for the purpose of manufacturing chemicals.

The Teikoku Spinning Co. has been established at 3445 Nishisugamo-machi, Tokyo, to manufacture spindles, etc.

The Kaida Co., Ltd. was recently formed with offices at Kitanaka Utura-dori, Sennan-gun, Osaka, to manufacture dyes.

The Aoi Gumi was recently organized as a limited company under the management of Y. Sato for the manufacture of construction and fire-proofing materials. Offices, 11 Hachikan-cho, Kyobashi-ku, Tokyo.

New Breweries, Japan.—It is reported that the Teikoku Brewery Co. will erect a brewery at Shimonoseki and the Dai Nippon Brewery Company will erect another plant at Fukuoka city.

Toyo Brush Manufacturing Company has been organized as a limited partnership to manufacture brushes. Offices, 967 Sagisu-machi, Nishinari-gun, Osaka. Manager, Mr. Hosokawa.

Nippon Cordite Company, Ltd. has been organized with a capital of Y. 1,000,000, all paid up, to manufacture explosives. Offices, 1 Itchome, Yuraku-cho, Kojimachi-ku, Tokyo. Managing Director, Soichiro Asano.

Kanto Leather Company, Ltd. has been organized with a capital of Y. 150,000, quarter paid up. Offices, 2430 Mikawashima-mura, Kitatoyoshima-gun, Tokyo-fu. Manager, W. Uyehara.

Kirin Paper Mill.—A Sino-Japanese enterprise with a capital of Y. 5,000,000, has been organized by Baron K. Okura and General Ho-Ki of Kirin to erect a paper mill. Permission has been solicited from the ministry of commerce and agriculture at Peking.

Tokyo Yushitsu Celluloid Seizo Kaisha.—(Tokyo Celluloid Manufacturing and Export Company) has been organized with a capital of Y. 500,000, quarter paid up, for the manufacture and sale of celluloid articles. Offices, 256 Yanaka, Nippori, Tokyo-fu. Managing Director, I. Takagi.

Obitani & Company, Ltd. has been organized with a capital of Y. 1,000,000, one half paid up, for the manufacture of cotton cloth. Offices, 1026 Kaizuka-machi, Sennan-gun, Osaka fu. Manager, R. Tsuji.

The Nishiyama Iron Works has been established as a limited company for general machine and foundry work. Offices, 105 Nishikujo Shimonomachi, Nishi-ku, Osaka. Manager, U. Nishiyama.

Miyamoto Shoten has been established as a limited partnership for the sale of asbestos, machine tools, etc. Offices, 10 Itchome Kami Fukushimanoka, Kitaku, Osaka. Manager, D. Agata.

Shibazono Iron Works, Ltd. has been organized with a capital of Y. 200,000, fully paid up, to manufacture machinery and tools for the army and navy arsenals. Office, 46 Matsumoto-cho, Shiba-ku, Tokyo. Manager, M. Ota.

Yoneda Mining Company, Ltd. organized two years ago with a capital of Y. 1,000,000 for gold mining has removed its offices from Osaka to 13 Nichome, Kobiki-cho, Kyobashi-ku, Tokyo. Managing Director, M. Kasaginu.

Tairiku Production Company, Ltd. was organized with a capital of Y, 230,000, quarter paid up, for engaging in gold mining. Offices, 4 Sanchome, Nishi-ku, Kanda-ku, Tokyo. Managing Director, J. Miyake.

MINING

Shantung Gold Mines.—The *Sheng Pao* says there are more mines in Shantung than in any other province in China. Since the occupation of Tsingtao, mining enterprises have been carried on by Japanese on a large scale. About twenty such corporations have already been registered. According to the latest reports from Shantung, some Japanese and Chinese have discovered gold mines in Chihsien. These mines were operated in old times, and were evidently "sealed" up by authorities. Two Chinese named Chi and Wang are trying to raise capital to work them.

Kailan Developments.—During the current year, two new pits will be sunk to increase the output and the work of double-tracking the railway between Kaiping and the Lanchow collieries and Chinwangtao, the line being exclusively for coal transportation, is expected to be comprleted within the coming 18 months, while the present wharf equipment at Chinwangtao will be enlarged to meet the greater demand upon it.

A big coal-loading wharf is to be established at Tongku, at the mouth of the Peiho, in addition to the erection of an extensive steel plant at Chinwangtao, at an estimated outlay of $25,000,000 Mex., the plant to have a capacity of 250 tons daily, and will smelt ore from Paohsingshan, in Anhui province, along the lower Yangtze.

It is said that the Chinese government will exempt the output of the Kailan mining administration from likin and other taxation, with the object of accelerating the industry.

The annual amount of Kaiping coal now imported into Japan totals about 700,000 tons, but this will be increased to 1,000,000 tons upon the completion of the enlargements and improvements.

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The Taisho Mining Co., Ltd. was organized recently with a capital of Y.500,000 with offices at 19 Nichome, Kaga-cho, Ichigaya Ushigome, Tokyo.

The Rasa Phosphorous Mining Co., of Osaka, has opened a branch at 1 Itchome, Yuraku-cho, Kajimachi-ku, Tokyo. Its capital is Y.1,500,000 fully paid up.

Japan Coal Enterprise, Saghalien.—A semi-official company with a capitalization of Y. 80,000,000 of which the Japanese government will own one-half, is to be formed for the exploitation of the mineral deposits of Saghalien. The island is believed to have some of the richest coal deposits in the world, the estimates of experts as to the extent of the deposits varying from half a billion to seven billion tons. The company will also improve ports and build the railways needed for the marketing of the output.

The Nippon Industry Co., Ltd., with a capital of Y.150,000, will engage in mining business. Its office is at 5 Sanchome, Yuraku-cho, Kajimachi-ku, Tokyo.

The Kyowa Coal Mining Co.—Has been established with a capital of Y.50,000, quarter paid up. Offices at 1 Nichome, Minami-maki-cho, Kyobashi-ku, Tokyo.

The Miike Coal Mining Co. with a capital of Y.7,500,000, half paid up, will soon commence operations. Offices, 1 Minami-maki-cho, Kyobashi-ku, Tokyo.

New Coal Mines, Japan.—The Daido Industrial Company, of Osaka, recently commenced coal mining operations in the Ayabe-machi district of Kyoto prefecture.

Another Mining Monopoly.—With a view to placing all the undeveloped mines in Chihli under the control of the provincial government, Tuchun Tsao Kun sent a petition to the presidency for the establishment of a mining administration bureau on the lines of the government mining bureau of Hupeh.

Graphite at Laiyang.—A deposit of graphite suitable for lead pencils has been discovered in the northwestern part of Laiyang Hsien, Shantung, at a village called Yuehsoih. The owners are proposing to open the mine under the Chinese bureau of mines regulations for the exploitations of a second class mine.

As these regulations state that a second class mine can be operated only with the consent of the people of the immediate district, a number of the progressive younger gentry of Laiyang district have formed an association pledged to either compel the operators to devote 2 per cent. of the proceeds of the mine to education within the county or to obstruct the operation.

Tin in Johore.—The firm of Messrs. Sime, Darby & Co., report the discovery of tin in Johore and claim that the find is more valuable than any hitherto made in Malaya.

Canton Mining Bureau.—A bureau of mines has been established with offices in the Treasury Building. This bureau will control all the mines of the province and issue permits in accordance with the mining laws.

Mr. Tung Chic-yi, a well-known miner and capitalist in the Straits Settlements, was appointed chief of the bureau and a place on the second Maloo in Tung Kuan has been secured as headquarters.

With his wide experience in mining enterprises in the Straits Settlements, Mr. Tung is a very capable man for the position. Great confidence is placed in him by the military government to assist in the development of the vast mineral resources of the country.

Kungchangling Iron Mine.—An agreement was concluded between Mr. N. Iida (a Japanese) and the Fengtien provincial authorities to work the iron mine in Kungchangling in Fengtien province under Sino-Japanese joint management. This took place in May, 1916. The Peking government gave sanction to the enterprise, and preparations for beginning mining work were taken up at once. The Peking government however, failed to hand down a formal permit, much to the impediment of the work. Military Inspector Chang-tsolin of Manchuria has been pressing the Peking government from time to time, and we hear, the desired permit has been issued by the department of the agriculture and commerce.

According to reports received from Fengtien, the Japanese "San Lin" Company has formed a corporation with the provincial authorities for the operation of these mines. A railway is to be constructed from Mukden to Kungchangling and will then be extended to Liuyang. Two iron bridges are to be built and tunnels constructed. It is stipulated that all iron ore is to be sold to Japan.

Kungchangling is situated at about 22 miles southwest of Chiaotou on the Mukden-Antung Line, and its mining zones consist of Huangnikou section comprising 698,725 *tsubo*, Kungchangling section comprising 3,696,881 *tsubo*, and Talatzu section comprising 2,328,484 *tsubo*. Its total iron reserve is estimated at not less than 200,000,000 tons. No modern equipment, worth mentioning has yet been installed. The result of analysis of the rich ore mined thereat is as follows:

Iron	... ...	71.200 per cent.
Silicic acid...	... ...	0.320 ,,
Sulphur ...	... ...	0.024 ,,
Phosphorus	... ...	0.017 ,,
Specific gravity	... ...	4.5-4.7 per cent.

Mining Industry, Japan.—The number of applications filed with the authorities for mining rights during January and February of this year stood at 1,591 only, while that of the corresponding period of last year was 3,732. The copper industry has suffered the severest blow. Coal mining has also suffered and the number of applications presented to the authorities during January and February reached 467 only, a decline of 1,484 as against the same period of the preceding year. It is expected that the output of coal for the current year will show a marked decline. On the other hand, petroleum mining is being carried on rather prosperously.

MINT

Java Mint.—The erection of a separate mint for the D. E. Indies is being considered. Mr. Vissering, president of the bank of the Netherlands, is in favor of the creation of a special Indian guilder, to be called "rupee" for use in the colony.

OIL

Taiwan Oil Field.—The 18th well of the Hoden Oil Company at Shinchiku, Taiwan, sunk to a depth of 140 feet, suddenly spouted at the rate of 20 *koku* in two hours.

Japanese Petroleum Notes.—The Nippon Oil Co. has succeeded in increasing the output of its oilfields in Akita prefecture since last spring in order to make up for the gradual decrease of the output in the Echigo oilfields. The output of the Kurokawa field has recently increased to over 1,400 *koku* daily. The new oilfield at Uruyama is very promising, ten wells producing about 230 *koku* daily. Other oilfields at Kuroiwa, Katsurada and other districts are also reported to be promising. The total output of the wells in the possession of the company, says *Reuter's* trade service, at present exceeds 2,500 *koku* a day, an increase of about 500 *koku* compared with last spring.

In the island of Sakhalin, a syndicate recently organized by the Nippon Oil Co., the Hoden Oil Co. and Kuhara Mining Co., and other interests, is pushing further developments, and at five points along the sea-coast of the island, wells are being drilled. So far, however, no commercial oil supplies have been met with. In Borneo it is reported (and we give the report as received, and with reserve) that a party of Japanese sent out by the Kuhara Mining Co. on the strength of its acquisition from a British Borneo company of the right to exploit petroleum districts in North Borneo, has met with success. The presence of good pools has been proved and wells are now being drilled.

The total amount of petroleum produced throughout Japan during last year reached 3,605,000 *koku*, a decline of 3,000 *koku* as compared with the preceding year. The details in comparison with three preceding years are as follows:

		1917	1918	1919	1920
			(In 1,000 *koku*)		
Crude oil	...	2,600	2,235	2,072	2,084
Naphtha ...	...	125	147	148	146
Illuminating oil ...		456	308	244	185
Light oil ...	...	615	656	580	615
Machine-oil	...	353	347	366	390
Fuel oil ...	...	549	332	198	185

The Asahi Petroleum Co., Ltd. has been organized at 26 Minami Konya-cho, Kyobashi-ku, Tokyo, to operate a refinery.

The Taiyo Petroleum Co. will increase its capital from Y. 5,300,000 to Y. 6,500,000, for extensions in their business.

The Yushui-Shokai has been established for the purpose of developing oilfields. Office at 1 Itchome Yuraku Ano, Kajimachi-ku, Tokyo.

Japanese Prospect Borneo Oil.—Following an investigation made by the South Seas Exploitation Union, organized by Messrs. Kuhara and Company, of Osaka, the Mitsubishi Company and Messrs. Suzuki and Company, of Kobe, it is stated that the Kuhara Mining Company acquired petroleum concessions in North Borneo last year, working these conjointly with the Hoden Oil Company and the Rising Sun Company. Kuhara and Company drilled about a dozen oil wells during 1920, but they did not yield satisfactory results. Though the company is said to have lost £500,000 on these first wells, they will sink about twenty more during 1921.

RAILWAYS

New Railway Loan.—To facilitate the transportation of coal the Kailan Mining Corporation submitted a proposal to the ministry of communications to double track the Peking-Mukden Railway between Tangshan and Shanhaikuan. Arrangements are now being made to commence work, and in order to provide funds the ministry of communications are negotiating with the Peking Syndicate for a loan.

Inner Mongolian Railway.—It is reported among Chinese military men that for frontier defensive purposes, the high authorities in Fengtien and Heilungkiang have approached the Peking government recommending the construction of the proposed Chinchow-Aihun trunk line which was dropped on account of the joint opposition of Russia and Japan some years ago.

Shimonoseki Ferry.—The railway department has decided to build two ferry boats with a view to improving the ferry service in the Shimonoseki Strait. When they are completed the squadron of ferry boats there will have a capacity of carrying 500 freight cars a day.

Chinese Engineer Honored.—The erection of a bronze statue to the late Mr. Jeme Tien-yu at Pataling, on the Peking-Suaiyuan Railway is proposed by Chinese railway officials, as a tribute to his memorable services as Engineer-in-Chief of the Peking-Kalgan Railway, the only railway under complete Chinese control.

Chinchow Chiaoyang Line.—The survey of the Chinchow-Chiaoyang railway line has been completed and construction work begun. The line starts at Chinchow on the Peking-Mukden line and ends at Chiaoyang, Inner Mongolia. The line will be operated as a branch to the Peking-Mukden line and the expenses for the construction will be provided from the income of that railway.

Hukwang Railway.—The survey of the 500-li extension of the Hankow-Canton railway from Hunan to the border of Kwantung being completed, President Yen of the railway, now in the United States, is reported to be trying to raise funds for its construction. It is thought he will be unsuccessful, however, as the United States is a member of the new loan consortium. In the meantime, preparations are being made for the purchase of the necessary land.

Chekiang Railways.—The Tuchun of Chekiang is anxious to employ his soldiers to build the railway from Hangchow to Gyiuchow.

The treasurer has paid the surveyors of the new road from Hangchow to Foochow the first instalment of $6,300, and no one is to get more than $2 a day.

Shimonoseki Tunnel.—The geological survey of the sea beds in the Shimonoseki Strait is practically finished.

The survey was started in the financial year 1919, 1920 by effecting the boring of the sea beds at seven points. Lately the depth of 100 to 120 feet has been reached and it is now ascertained that at most points the sea beds are of the same strata and that the tunnelling work can be easily proceeded with, it is stated.

On the strength of this result, experts are now being commissioned to frame a working plan for tunnelling while at the same time preparations will be pushed for actual works. According to a report from an official source, the preparatory work will be finished in the financial year 1921-22.

In the year 1922-23 the actual boring of the sea beds will be commenced to have an under sea tube which will serve to connect the Kobe-Shimonoseki Railway line with the Kyushu Railway terminus without the medium of the ferry service as at present.

Pending the formulation of the working construction plan no particulars about the tunnelling works can be obtained, but it is stated that boring will be effected at the depth of 150 feet from the sea beds.

Li Hsien Coal Mining Co., Anhuei.—The Li Hsien Coal Mining Co., Hsien-chen, Anhuei, operating the coal mines in Feng Wang Shan mountain, having an output of about 70 tons of coal per day, will build a light railway connecting the colliery with the sales department, a distance of about three li.

Japan Orders Locos.—Experiments having proved satisfactory, it has been decided to order 200 new locomotives from the Kawasaki Dockyard, the Hamamatsu Government Works, the Japan Car Co. and other large locomotive builders.

New Station and Line, Japan.—To build a station at Suita the Kobe government railway office will expend Y.500,000 and for constructing the Joto line Y.700,000 will be spent.

New Lines, Japan.—Permission has been granted for the construction of railways between Kitakata, Fukushima prefecture and Yonezawa, Yamagata prefecture, also the building of another line between Hawatoubetsu and Okibe, Kokkaido and still another between Hahamatsu, Shidzuoka prefecture and Tatsuo, Nagano prefecture.

New Locos, Japan.—Locomotives with a wheel diameter of 5 feet 9 inches, six inches larger than the size of wheels on ordinary locomotives, are to be used on the Tokyo-Shimonoseki Railway.

Harbin-Aigun Railway.—There have been frequent reports in the *Chinese Press* to the effect that the Chinese government has cancelled the agreement made sometime ago with the Russian interests for the construction of a railway from Harbin to Aigun via Mukden and connecting Tsitsihar with Mukden, and that this line would be built by a Chinese company. The ministry of Communications states that there is no truth in this report.

Improvements, Shidzuoka.—Extensive plans are being prepared in connection with tunnel building, quay construction and tram lines by the transportation office of the Shizuoka prefecture. It is expected that the sum of Yen 15,000,000 will be used for the purpose.

Paotow Extension, Peking-Suiyuan Railway.—The cost for building the Paotow branch of the Peking-Suiyuan Railway is estimated at about $5,120,000.

Proposed S.-N.-R. Branch.—Chi-tze-yen is a busy market, situated to the east of Changchow, Kiangsu, a city located on the Shanghai-Nanking railway, but there is no connection by rail between the cities. The residents of Changchow have now raised a fund and have asked the Shanghai-Nanking Railway board to build a short branch line from Changchow to Chi-tze-yen.

Hangchow-Mokanshan Branch of S.-H.-N. Railway, Mokanshan.—The S.-H.-N. board is planning to build a branch line from Hangchow to Mokanshan, a distance of about 30 miles.

Steel Rails for P.-S. Railway.—A lot of 85-lb. steel rails has been purchased by the Peking-Suiyuan Railway for the Cho-tze-shan-Suiyuan section of the line. It is expected to complete the construction of the section in May of this year.

Car Factory, Java.—In one of the harbors on the north-coast of Java a German concern intends to erect a railway-car factory.

Ssupingkai-Taonanfu Line.—The Ssupingkai-Taonanfu Railway intends to commence work on the extension from Chengchiatun to Taonanfu from 1st April. 3,000 people from the famine stricken district in North China are to be given employment, and sent back to their homes after the completion of the work.

Hankow-Canton Railway.—Owing to the lack of funds, construction work on the Hankow-Szechuen railway will be suspended, but the government will immediately take up the building of the Hankow-Canton line. In order that the Hupeh-Hunan section will reach the important city of Hengchow, the government has ordered the administrations of the Peking-Mukden, the Peking Mukden, the Peking Hankow, the Tientsin-Pukow Peking-Shui-yuan railways to supply funds as follows.

The Ching-Han line will set aside sum of one hundred and thirty thousand dollars per month, the Cheng-Feng and the Tsin-Pu lines one hundred and twenty thousand dollars per month each, while the Ching-Shui line will only subscribe thirty thousand dollars per month, total four hundred thousand dollars every month, from their surplus receipts, for the immediate construction of the Chuchow-Sintzelin section in Hunan. It is estimated that the sum of fourteen million dollars will be required during th first three years while the building of the Sintzelin-Hengchow line will require about seven million dollars for the fourth and fifth years. It is reported that within five years, the Chuan-Yueh-Han trunk railway will reach the Kwangtung frontier and then it will connect with the Canton-Samshui section in Kwangtung province. The government has been forced to do this because there is no hope of any foreign loan for the construction of this most important trunk railway in China and also its completion will render the reunification of the North and the South of China much easier and earlier as better communications will improve the political situation.

Locomotives for Russia.—At present there are 1,700 locomotives under construction for Soviet Russia in foreign countries. 1,100 of these locomotives are being built in Sweden and 600 in Germany. The German locomotives will be ready in May and those of Sweden, in August. Besides, there is a big order for various railway supplies placed in Germany.

Proposed Tienpaoshan-Tumen Railway.—In 1916 a proposal was submitted to the government by Mr. Wen Loo of Kirin, backed by certain Japanese financiers, for the construction of a railway from Tienpaoshan, near Antung, to the Tumen River. A sino-Japanese company was to be formed with a capital of Y. 2,000,000, half of which was to be subscribed by the Chinese and the other half by the Japanese. It was proposed that the shares should be Y. 1,000 and that half of each share should be held by Chinese and the other half by Japanese. In that year the government was adopting a pro-Japanese policy and the principle of the scheme was agreed to. Since then five years have passed and nothing further has been done in the matter, but it is now understood that Mr. Wen Loo who arrived in Peking recently, intends to approach the government again on the question. Owing to the complicated character of the proposed company, the government will reconsider the whole scheme before any steps are taken.

Locomotive and Waggon Tender.—The Chinese banking group, located at the Peking Bankers' Association, Chienmen, Peking, announces that tenders for the supply of materials as described hereunder will be opened at the head office at 2. p.m. on 28th June, 1921.

30 locomotives, Prairie type, 2 locomotives, Mikado type, 3 locomotives, Pacific type, 6 locomotives, English type, 200 40-metric ton all steel high side open waggons. - All for the Peking Hankow, Peking-Suiyuan, Tientsin-Pukow and Shanghai-Hangchow-Ningpo Railways.

Elevated Railway, Tokyo.—An elevated railway, two tracks, will be built between Manseibashi and Uijeno at a cost of Y. 24,000,000.

Tokyo Underground Railway.—With machines that will bore 100 feet every day recently purchased in Europe by Chief Engineer Yada of the Tokyo Underground Railway Co., a commencement with the proposed tunnel will be made shortly.

New Locos, Japan.—The railway journey between Tokyo and Kobe, by the special express, will be shortened by two hours on the completion of big locomotives, now under construction at the government railway bureau, of which a trial was conducted recently. The result of the trial was successful, as the new locomotives proved capable of running more than 52 miles an hour between Hamamatsu and Kobe, 44 miles between Kyto and Osaka. They will be able to draw a 42-coach train.

Peking-Mukden Improvements.—A correspondent has furnished a few facts showing what is being done to improve conditions on the Peking-Mukden line. It is expected that very shortly eight more goods engines which are on their way from the United States will have been put into service; four other heavy type goods engines are being tendered for, and five are being built in the Peking-Mukden railway works at Tongshan. In addition to these, it is hoped that sanction will shortly be given for the purchase of five more heavy passenger engines, which, it is anticipated, will be in use by next autumn. Permission to buy 200 40-ton steel cars and 200 30-ton covered cars have also been requested, all these being essential to cope with the rapidly increasing traffic. In addition, 60 30-ton covered cars are being constructed at Tongshan, where also five first-class passenger cars, four first-class buffet cars and three first-class sleeping cars are being built. Twenty goods sheds have also been demanded, and sanction for 41 more will be applied for very shortly. If authority is given, goods sheds will thus be provided at all the principal stations along the Peking-Mukden line.

It is satistactory to record that between Shanhaikwan and Chinhsien, a distance of about 114 miles, sanction has been given for relaying the lines with 85-lb. rails, which are expected to arrive early this spring. These will make possible the use of a heavier engine over this section, and therefore the haulage of greater loads. It is stated by the railway authorities that over the whole line the maximum traffic for a single line has not yet been reached, but it is clearly recognized that the double tracking of the line between Tongshan and Chinwangtao has become a necessity, and approval of this work has been requested.

Tokyo Underground Railway Company organized in August last year, will start this spring the construction of its proposed trunk line between Shinagawa and Senju *via* Nihombashi and Uyeno, extending for ten miles.

Trunk Line Extension.—The ministry of communications has a scheme lengthening trunk lines of all the Chinese railways. The scheme is first to lengthen the Peking-Mukden line to Tsitsihar, *via* Kingchow and Tiou-nan, the Peking-Suiyuan line to Kiakhta, extending the Peking-Hankow line southward to Canton and westward to Ili *via* Tsailanyeh, Shensi and Kansu; and later, extension of other lines will be carried out.—*Chinese press report.*

S.N.R. Receipts.—The revenue derived from freight on the Shanghai-Nanking line for January, 1921, is $9,011.40, indicating a decrease of $1,581.-15 as compared with the figure for January, 1920; for February, 1921, the amount is $6,481.10, a decrease of $1,039.70, as compared with the figure for February, 1920; and for March, 1921, the amount is $13,002.29, a decrease of $1,005.11, as compared with the figure for March, 1920. The total amount of this revenue for the three months, January, February and March, of 1921, is $28,504.79, showing a decrease of $3,625.96, as compared with the total amount of $32,130.75 for the corresponding period of 1920.—*Chinese press report.*

Ibaraki Railway Company, Ltd. has obtained permission to construct a line from Kawada-mura to Sawayama-mura in Ibaraki prefecture, a distance of 15 miles. The construction capital is said to be Y.1,500,000. Managing Director, S. Seya.

RIVER AND HARBOR IMPROVEMENTS, WHARVES, DOCKS, ETC.

Governor Tsao Suggests Improvement of Chulung River.—Governor Tsao Jui of Chihli suggests that a certain portion of the contributions from the American Red Cross Society for the famine relief be allotted for the dreding of the Chulung River which is regarded as one of the important waterways of North China.

Changho Harbor.—The Peking government *has decided to construct a harbor at the mouth* of the Changho river, by floating a loan. It is reported that the terms of the loan which is said to have already been concluded, are as follow: (1) The syndicate of bankers in Chihli province undertakes the construction of the harbor, wharves, jettyworks, lighthouses. (2) Government land will be given to the syndicate; while the land possessed by private persons will be purchased according to the current price. (3) The syndicate will establish the municipality as well as the local police force. (4) The syndicate will establish a bank and be allowed to float bonds. (5) Foreigners wil lbe employed as accountants. (6) The construction work will be extended over fifty years. (7) The contract of the loan will be signed between the Chihli local government and the syndicate.

Grand Canal Repairs.—The gentry of Nanhsin, Chekiang, Mr. Y. C. Pang and several others, have a plan to repair the eastern enbankment of that section of the grand canal flowing by the city at an estimated cost of $600,000. Funds are being secured, and work is expected to commence soon.

Tokyo Improvements.—*The following improvements* are contemplated by the Tokyo city office:—

Widening the Irifune River, Higashi Horidome River, Satobori Canal, Kajibashi Canal. Build a new canal at Fukagawa-ku from the Oshima River. Reclaim land from Akashicho to Honminato-cho, Kyobashi-ku. Reclaim land from Ishijima-bashi to Ichujiwa, Fukagawa-ku.

Sakai Harbor, Japan.—Y.3,000,000 will be spent for reclamations in Sakai Harbor near Osaka.

Whampoa Harbor.—It is learned that the Chinese authorities have approved the suggestion to divert the $400,000 intended for the conservancy of the Canton River to the deepening of the Whampoa Harbor. The government is being approached and will be requested to communicate with the diplomatic corps regarding the matter.

Haichow Port Works.—A presidential mandate appoints Tuan Shu-yun to the post of director-general to supervise the work of constructing Haichow, Kiangsu, the future terminus of the Lung-Hai railway, into a commercial port.

Tsingho Harbor, Chihli.—A contract has been *concluded between the provincial government of* Chihli and the Chihli syndicate to build a harbor at Tsingho, Chili. *Chinese press report.*

ROADS

Chefoo-Weihsien Road.—Remarkable progress has been made in the construction of the Chefoo-Weihsien road. The section of the line between Weihsien and Fushan has already been completed, and it is believed that the whole road will be finished by the middle of May.

Kwangtung Road Protests.—The inhabitants of Waichow have sent a protest to the civil governor against the proposed American loan of $5,000,000 for the construction of the public roads in the east river districts. Great indignation has been raised among the inhabitants, as it is reported that a ten years' monopoly has been given to Americans for the construction of these roads.

Public Improvements, Tokyo.—Forty-nine streets *within the city limits and thirty-seven stretching* out into the suburbs are marked for improvement by the city planning committee of Tokyo. According to the plans as published in the Japanese newspapers, the cost of remodelling Greater Tokio city will be Y.137,000,000 ($68,500,000). The streets to be improved total 73,000 *ken*—about 438,000 feet—in length.

This is the second gigantic plan for the improvement of streets in Tokyo, the first one having been *made in 1890, when 127 streets were repaired.*

The widest street proposed will be about 163 feet in width—that is the street from the proposed eastern outlet of Tokyo station through the Kami-maki-cho, Nihombashi, to the heart of the city in a straight line. The narrowest will be about 36 feet in width, the classification of the improvements being influenced by the requirements of the localities.

Bridges will be built of steel, stone, steel frame and concrete or other materials of a durable character.

No street car line will be built in a street of less than 12 *ken*—72 feet—in width.

The draft also fixes the width and depth of rivers and canals passing through the city, and the height of bridges over them. It likewise provides for the *dredging of canals, repairing of brooks, moats* and canals and proposes to reclaim certain parts of moats for street improvement purposes.

New Roads, Taiwan.—The government of Taiwan (Formosa) has under contemplation a plan for an extension and improvement of the system of roads, which, when completed, will do a great deal towards popularizing the use of motor vehicles.

Road Work, Tsinanfu.—*A road is being built* to the east of Tsinan station of the Tientsin-Pukow railway, at a cost, estimated at $18,800.

Ningpo-Fenghua Automobile Road.—It is reported that an automobile road of about 95 *li* long will be built between Ningpo and Fenghua, Chekiang.

Communication Bureau, Paoshan.—A bureau has been organized, with the sanction of the ministry of communications, to carry out road works in Paoshan, near Shanghai. The bureau has undertaken to build two broad roads, one 30 miles long leading from Shanghai to Taichong, and the other 15 miles long from the city of Paoshan to Kashing.

Indo-China Roads.—It is perhaps not generally recognized that French Indo-China has probably the best roads in all Asia. At present there are about 5,500 miles of excellent roads and an additional 2,000 miles is expected to be constructed within the next four years. Such conditions present an excellent field for motor-cars, trucks and motor-cycles. Whilst cars of French manufacture are admitted free, an import duty at present *prevails against other makers. Local opposition* to this duty is strong.

SHIPBUILDING

Japan's Super-Dreadnoughts.—The Japanese super-dreadnought *Mutsu*, 33,800 tons which was launched at the Yokosuka naval yard in May last year, will be completed in the latter part of *June of this year. It is expected that she will be* delivered to the navy by the middle of August at the latest. The super-dreadnoughts *Kaga* and *Tosa*, which are larger than the *Mutsu*, which are being constructed at the Kawasaki yard, Kobe, and the Mitsubishi yard, Nagasaki, respectively, are expected to be launched this summer, the *Kaga* in May and the *Tosa* in September.

New Dollar Steamships.—The Robert Dollar Company has purchased two more of the German ships interned at Santa Rosalia—the *Walkure* and *Orotava*. The former is of 3,046 tons net register and the later 2890. They were purchased from the French government, to whom they have been allotted by the allied reparation commission. The terms of the transfer were not disclosed.

Government Steel Works, Japan.—The government will issue Japanese treasury notes to the amount of Y.23,500,000 in order to supplement the deferred working capital of government iron-works.

New Tank Steamer.—The *Tsurmi*, a special service oil carrying vessel of 8,000 Tons capacity, is being built by the Osaka Iron Works.

New Dock for Kiangnan.—The Kiangnan Shipbuilding Yard, Shanghai, will build a new dock, 500 feet long to the west of the arsenal.

New Ferry Floats.—The Japanese railway department has placed an order for two more railway car ferry floats from the Osaka Iron Worsk for the Shimonoseki-Moji service. The cost is Y. 450,000.

Kawasaki Dockyard Extends.—The Kawasaki Dockyard will increase its capital from Y. 45,000,*000 to Y. 90,000,000 to take* [care of projected extensions which include a chemical department and aeroplane factory.

TELEPHONE

New Exchange, Japan.—At a cost of Y. 500,000 *a new three storied telephone exchange* will be built at Sanchome, Aoyawa.

TRAMWAYS

Automatic Distance Recorder.—The Tokyo Tramway Company has recently purchased and installed an automatic distance recording machine from America.

Tokyo Tramway Company will build a new line between Dozaka and Otsuka.

Keihin Tramway Company will build a new line between Osaka and Sakurai.

Tobu Tramway Company is building a new line between Hagyu and Oeyodu.

South Osaka Tramway Co. will increase its capital to Y. 5,000,000 in order to double track their line between Iakai and Takata-machi, a distance of 18 miles.

The Ikegami Electric Tramway Company, Ltd. has increased its capital to Y. 1,850,000 in order to extend its line between Omori and Kamatu through Ikegami.

Dairen Tramway Extensions.—The South Manchuria Railway Company's electricity works has decided to extend the tramway from the front of the company's general offices to Jijiko viâ the army memorial, and also from the present terminus of Fushimidai to Shotoku colony (a new colony raised by the local builders).

About 10,000 lamps are to be newly installed at Shahokou, Shotoku colony, Tanchiatun (behind and west of the S.M.R. Co. general laboratory), and part of Hsiaokangtzu.

New Tramway, Japan—The building of a new tram-line between Dozaka and Naka-machi with Y. 50,000, has been decided upon.

WATERWORKS

Hangchow Waterworks Project.—Prominent citizens of Hangchow in Chekiang province are planning to establish a waterworks in their city. It is understood that $2,000,000 will be required.